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Light in London.

E now resume our estimate as to the aggregate cost of producing the imitation-sunlight with which the streets, the houses, and the shops of this Mammoth Metropolis are illumined every night after dusk.*

Light by day is so commonplace a commodity that few trouble their wits as to whence it comes, or what is the expenditure of Nature's resources required to maintain it. Who but an enthusiast astronomer bothers his brains as to how many tons of fuel are needed to keep up the combustion in the solar "photosphere," which, like a mighty aurora borealis, is said to encompass the great orb of day with a pellicle of fire,—to enfilm the dark globe of the sun, as it were, with a huge brilliant bubble of light and heat? Who, too, but a dreamy speculative chemist tries to crack with his "wisdom-teeth" the hard nut of the *cold flames* of "phosphorescence," or indulges in wool-gathering wonderment as to how it is that certain bodies, when exposed to the solar rays, seem to drink in the sunlight as if it were some luminous liquid, and they were merely so many luciferous sponges; and then to give it out again in the dark, divested of the caloric which originally accompanied it? Or who but some far-seeing genius, like the elder George Stephenson, would be able to detect in the light and heat given off by burning coal only an evolution of so much "bottled sunshine"; and that the ignited fossil timber was simply rendering up, during combustion, the glitter and the glow of the very solar rays which it had absorbed in the primeval forests,—long before any human being had left a footprint on the sands of Time.

But so it, assuredly, is. Our streets and our houses are lighted up at night with the self-same sunshine which the carbon of the ante-diluvian trees had imbibed ages upon ages ago. Nature had merely treasured the golden rays, and kept them locked in the subterranean coffers of the earth, until such time as man should discover the secret spring of the casket, and be able to claim as the reward of his cunning the glittering jewels of light and heat which had been so long and carefully stored for him in the recesses of the great geological cabinet.

But, if it be true that the modern invention of gaslight is merely the discovery of the means of liberating the pre-Adamite bottled sunshine, it is equally true that every artificial light,—even that of a farthing rushlight,—which is produced by the more or less rapid combustion of some combustible body cannot be other than a gaslight,—since no combustible can be inflamed without being first resolved into its constituent gases. Hence gaslight, instead of being an innovation of the present century, is as old as artificial light itself. For whether the light be derived from the combustion of a fixed or mineral oil, wax or tallow, it is merely the gas from the decomposed oleaginous or fatty matter which burns, and, therefore, the light is essentially a gaslight. But with this difference: that in the one case the carburetted hydrogen is generated, by the lamp or candle, on the premises to be illumined; whereas in the other the "inflammable air" is manufactured far away, and transmitted through tubes to the place where it is to be consumed.

Such are, briefly, some of the chemical curiosities of gaslight, which, we repeat, is simply emancipated fossil sunlight; while every kind of artificial light arising from rapid combustion is merely a more or less crude form of gaslight.

And now let us see what it costs to illumine the entire metropolis with this same fossil sunlight which man has, only within the last century, learned to extract from the destructive distillation of coal. Let us endeavour to form an estimate as to how many millions of pounds sterling have been sunk in the construction of the several gasworks throughout this giant capital; how many thousand miles of gas-mains lie buried beneath the London paving-stones; and what must have been the original expense of laying them down, as well as what amount of money is needed yearly to maintain them in a state of repair; what sum it must have taken to stud the 2,500 miles of streets in London, with almost as many lights as there are stars in the firmanent; what quantity of coal is annually required to keep them all burning for twelve hours on an average every night throughout the entire twelvemonth; how many million thousands of cubic feet of gas they collectively consume per annum; and, lastly, how much wealth the united ratepayers of the metropolis have to disburse every year, in order to meet this enormous aggregate expenditure.

The details, when thus massed into one vast consummate calculation, seem to be almost beyond the possibility of human ken; and yet it will be found that, by the aid of the Government returns in connexion with the subject, the task is by no means so difficult as at the first rough glance it would appear.

Imprimis, of the several gas companies distributed throughout London.

These, but a few years back, were some fourteen in number; at the present time, however, there are but eight in existence; four on either side of the river,—the "Chartered," or, as it is now styled, the "Gaslight and Coke Company," having absorbed no less than four of the previously-existing companies (to wit, the "City of London," the "Great Central," the "Equitable," and the "Western",—so that it is now not only the oldest but the largest of the metropolitan gasworks; while the "Commercial" has swallowed up the "British," and within the last month amalgamated with the "Ratcliff."

The districts supplied by the eight existing companies being severally regulated by what is termed the "Metropolis Gas Act" of August, 1860, it may be as well, before proceeding to define the localities appertaining to each particular company, to give a brief abstract of the Act in question (23rd & 24th Vict., cap. 125), which is entitled "An Act for the Better Regulating the Supply of Gas to the Metropolis."

The preamble to this Act runs nearly as follows:—

"Whereas the following Gas Companies (that is to say) the 'Gaslight and Coke Company,' the 'City of London Company,' the 'Commercial,' the 'Equitable,' the 'Great Central,' the 'Independent,' the 'London,' the 'Phœnix,' the 'Ratcliff,' the 'Surrey Consumers,' the 'South Metropolitan,' the 'Western,' and the 'Imperial' (thirteen in all) are for the most part incorporated by Parliament for supplying several districts of the metropolis with gas; and the said companies have agreed (instead of supplying gas by *different* mains in the *same district*) each to confine its supply to a *separate district*, in order to economise capital and avoid the too frequent opening of the public streets, it is, therefore, expedient that such *districting* should receive the sanction of Parliament: and whereas it is also expedient that provision should be made for the due regulation of all companies and persons supplying gas within the metropolis: May it therefore please your Majesty that it may be enacted," &c.

Then come the various sections, of which the subjoined is a brief epitome,—more particularly as regards the main clauses of the Act.

"The sanctioning of the assignment of different districts to the different gas companies is to be subject to triennial revision; the gas companies are to obey the orders of the Secretary of State, and bear the costs of altering the district; they are to light the streets when required by the authorities, but are not to be compelled to light any street where the lamps are at a greater distance apart than 75 yards; the local authorities may, if they think fit, provide the lamp-posts and lamps; the illuminating power and purity of the gas supplied is to be such as to produce, from an argand burner having 15 holes and a 7-inch chimney, and consuming 5 cubic feet an hour, a light equal to that produced by not less than 12 sperm candles of 6 to the pound, and each burning 120 grs. an hour. The limit of charge for the gas for the public lamps is to be not higher than the lowest rate charged to any private consumer; incoming tenants are not to be called upon to pay the arrears of outgoing ones; consumers are to have the right of appeal to the Home Secretary on any increase in the price of gas; the Home Secretary is to have power to issue forms of accounts to be filled up by the gas companies; each company is to cause to be made a map of its particular district, showing the mains or pipes laid down in it, and also the lines, sizes, and depths beneath the surface of all their existing mains, and before the end of December in every year is to make such alterations in the map as may be necessary; such map is to be deposited with the clerk of the county in which the district may be situate, and to be open to be inspected by any one on payment of 1s.; the pipes are to be laid so as not to be possible to contaminate the water by any escape of gas."

This Act may be regarded as the Magna Charta of the present system of Metropolitan Gas Supply,—assigning to each particular company its particular privileges; and, in accord-

* See p. 743, *ante*.

ance with the provisions of the statute, the metropolis has been parcelled out among the eight existing companies, with their districts of supply, in the undermentioned manner:—

I. *On the Northern Side of the Thames.*

1. *The Chartered or Gas Light and Coke Company.*—The whole of the City up to Whitechapel; the entire West-Central and Western divisions lying between Oxford-street and the river (formerly supplied by the "Equitable"); as well as the locality beyond Bayswater up to Shepherd's-bush (formerly supplied by the "Western"); with the exception of a small portion in the "heart" of the district which is supplied by the "London."

2. *The Imperial.*—The entire North of London up to Kingsland, except a small slice which appertains to the "Independent."

3. *The Independent.*—Part of Finsbury, and St. Luke's; as well as all Shoreditch and Kingsland; together with a small slice in the district supplied by the "Imperial."

4. *The Commercial.*—Spitalfields, Whitechapel, Mile-end, Stepney, and Bow Common; as well as (now) Wapping, Ratcliff, and Shadwell,—this company having recently amalgamated with the "Ratcliff," which formerly supplied those districts.

II. *On the Southern Side of the Thames.*

5. *The London.*—From Westminster Bridge to Vauxhall; as well as Kennington-road and Westminster Bridge-road; together with a small slice in the heart of the district supplied by the "Chartered."

6. *The Phœnix.*—From Vauxhall Bridge to Wandsworth; as well as all Clapham and Kennington, and stretching from Brixton, on the west, to Greenwich and Blackheath, on the east.

7. *South Metropolitan.*—Brixton, Streatham, and Camberwell, extending to Rotherhithe and Deptford.

8. *Surrey Consumers'.*—The whole of Rotherhithe and Deptford.

Having, then, set forth the number, as well as defined the districts, of the several metropolitan gas companies at present existing, the next problem to be solved is,—What is the amount of capital which has been invested in the whole of the above-mentioned gas-works? for that will tell us directly how much money it has taken to light London with gas. Thanks to the Government Returns, this can be easily arrived at.

Well, from the published "Accounts of the Metropolitan Gas Companies for the Year 1874," we gather, according to the several "Statements of 'Share Capital,' 'Loan Capital,' and 'Capital Account,'" forming the first three tables printed in the returns of each company, that,—

Up to the End of the Year 1874,

	Had Paid up.	Had Borrowed.	Had Expended.
	£	£	£ s. d.
The Chartered or Gas Light and Coke Company ...	3,150,000	813,500	3,830,914 14 10
Imperial	2,729,955	496,750	2,975,174 1 0
South Metropolitan	384,751	—	357,544 1 6
Commercial.....	450,000	—	416,558 6 0
Independent	228,000	25,000	234,245 11 1
London.....	732,580	142,792	840,239 13 0
Phœnix.....	882,000	175,000	989,054 10 3
Ratcliff.....	100,000	15,670	113,397 19 0
Surrey Consumers...	229,995	60,000	289,521 13 5
Total.....	8,887,281	1,828,712	10,046,580 10 1

Hence we perceive that up to the end of last year, there had been in the aggregate upwards of eight millions and three-quarters of money paid up in shares, and upwards of one million and three-quarters more borrowed, or very nearly ten millions and three quarters raised altogether by the metropolitan gas companies; while of this amount a fraction more than ten millions had been expended. So that we may say, in round numbers, that it has cost the enormous sum of ten millions of pounds sterling at least to light London with gas; for not only has more than that sum been expended by the above nine existing successful companies, but it is difficult to say how much extra has been lost by other non-existing, because non-successful, ones.*

Thus we land at the conclusion that it has taken as much as ten millions of money to develop the present machinery and appliances for the lighting of London with gas. Now, this sum includes, of course, the cost of buildings and apparatus required for the "works," the sums paid for the acquisition of land and for law charges, the expense incurred in laying down the mains and service-pipes, as well as in the manufacture of meters.

A glance at the gross expenditure of the collective metropolitan gas companies in the course of the year 1874 will readily teach us how the paid-up capital is generally disbursed, and thus enable us to determine,—approximately at least, if not definitely,—the next point in our inquiry, viz., what has been the cost of the collective "works," and what the expense of laying down the united "mains" throughout London. For instance: the gross expenditure of the nine metropolitan companies (including the "Ratcliff") amounted in the course of last year to a fraction more than 620,000*l.*, and of this sum, 470,000*l.*, or upwards of 75 per cent. of the whole, was paid for "new buildings and machinery," and 122,000*l.* odd, or very nearly 20 per cent., for "new and additional mains and service pipes"; while the remaining 27,000*l.* odd, or but 5 per cent. of the entire expenditure, went for sundries,—such as "new and additional meters, the acquisition of land, law charges, and the like." * So that at this rate three-fourths of the entire capital of the gas companies is required for the "works," and one-fifth for new and additional mains. Supposing, then, this proportion, or something near it, to hold good generally, it follows that of the ten million pounds capital expended altogether by the before-mentioned nine companies, the buildings and machinery must have swallowed up some six to seven and a half millions, whilst the mains and service pipes for the whole of London must have cost some two to three and a half millions sterling!

That the gas-works themselves should absorb by far the larger portion of the capital of the metropolitan companies will excite little or no wonder among those who are acquainted with the extent of the buildings and machinery required for the production of the enormous quantity of gas they are now called upon to manufacture. "Some of the large London works, indeed," said the writer of the article on "Gas-lighting" in the "Encyclopædia Britannica" (the 8th edition of 1856) "have to send out from a million to a million and a half of cubic feet of gas each night; whilst in the depth of winter, the Chartered Gas Works are required to supply not less than five million cubic feet nightly from their three stations!"

But this was written nearly twenty years ago, when the "Chartered" had not yet absorbed the "City of London," the "Equitable," the "Great Central," and the "Western" Companies, and when, indeed, London was not only much smaller (containing 50 per cent. less houses than at present), but lighted by as many as fourteen gas works, instead of only eight or nine as now. Consequently, the supply of gas which was thought prodigious but a quarter of a century ago may now be looked upon as comparatively insignificant; for, according to the Government Returns, the nine London companies produced altogether, in the course of the year 1874, the astounding volume of 14,000 millions of cubic feet!—which is at the rate of 38¼ millions every day throughout the twelvemonth. Of this enormous supply the "Chartered" sent out daily, on an average, 12¾ millions, the "Imperial" very nearly 11 millions, while the other seven companies collectively furnished the remaining 14¼ millions, or more than two million cubic feet each, on an average, each day the year through. Hence, as the winter nights are twice as long as the summer ones, it follows that the "Chartered," instead of having to manufacture barely two millions of cubic feet per diem in the summer time, and five millions in midwinter, has now to produce as many as eight and a half millions for the short evenings, and not less than 17 millions of cubic feet for the longer ones!

Now, a pound of Newcastle coal, according to the best experiments, will yield from 4 to 5 cubic feet of gas; and this is the consumption of merely one standard burner every hour. We have but to think then how many jets there are blazing away at the same time every night throughout the metropolis, and how many hours these have to be kept alight, while many,—as with the street-lamps,—are left burning the livelong night through, to be able to form some faint idea (by multiplying the number of jets by the number of hours the gas is alight) how many pounds of coal must be required to furnish the necessary supply. A ton of Newcastle coal, according to Mr. Peckstone (*vide* Peckstone on Gas-lighting), will produce some ten thousand cubic feet of gas (this is at the rate of 4·5 cubic feet per lb.); and hence it follows that to produce 38¼ million cubic feet, 3,850 tons of coal must be used nightly by the united metropolitan gas-works; while as much as 1,700 tons would be the consumption of the "Chartered" every night in mid-winter! * This will give us some notion of

* The following table shows the relative magnitude of the several metropolitan gasworks, estimated according to the relative amounts of their paid-up capital. Taking the share capital of the Chartered as 100·0, the following percentages will express the proportionate amount of money invested in the other establishments:—

Chartered.....	100·0	South Metropolitan...	12·2
Imperial	86·6	Surrey Consumers.....	7·3
Phœnix.....	28·0	Independent	7·2
London.....	23·2	Ratcliff	3·2
Commercial.....	14·3		

* As an instance of the relative extent of business done by the several London gas companies we may state that, in 1874, the Chartered expended 230,000*l.* odd upon new buildings and machinery, and the Imperial nearly 192,000*l.*, whilst the remaining seven companies laid out altogether only a fraction more than 48,000*l.* upon their works. Moreover, for new and additional mains and service-pipes it cost the Chartered nearly 88,000*l.*, and the Imperial nearly 17,800*l.*; whereas, the whole of the other seven companies did not devote more than 17,000*l.* odd to the same purpose.

* In order to produce the enormous volume of 14,065,464,000 cubic feet of gas during the year, a correspondingly enormous bulk of coal had, of course, to be coked or "carbonised." In the gas accounts of the Metropolis for 1874 there is a table giving what is termed a "Statement of Coals used," and included in this is a column headed "Coals carbonised during the Year." In plain language, this portion of the accounts shows the quantities of coals which the several companies had to coke, in order to extract the several quantities of gas which they had to supply throughout the twelvemonth. Adding together, then, the whole of the particulars contained in these columns, we find that the total quantity of coals carbonised in the year 1874 amounted to not less than 1,445,016 tons. Of this amount the "Chartered" carbonised rather more than 470,000 tons; the "Imperial," not quite 424,000 tons; and the remaining seven companies the remaining 550,000 tons. Now, if we divide the total quantity of gas produced in the year by the total quantity of coal carbonised, we have $\frac{14,065,464,000}{1,445,016} = 9,810$ for the number of cubic feet of gas yielded by each ton of coal; and this agrees so nearly with the amount (10,000 cubic feet) given by Mr. Peckstone as the average yield of each ton of coal that the round number may be fairly taken as the mean product.

Moreover, 1 cwt. of coal is said to produce, when carbonised, 2 bushels (of 41½ lb. each) of coke. Every ton of coals carbonised, therefore, should yield 40 bushels, or rather more than a chaldron (36 bushels) of coke. Well, the aforesaid Returns tell us, under the head of "Coke made during the Year," that altogether the metropolitan gas companies produced 1,355,671 chaldrons, or 48,800,000 bushels. So that, dividing the bushels of coke produced by the number of hundredweights of coal carbonised in the year, we have $\frac{48,800,000}{18,900,000} = 2·5$ bushels for the average yield of coke per hundredweight of coal, which is at the rate of 50 bushels (not quite a chaldron and a half) per ton.

But if the united metropolitan companies coke very nearly 1,500,000 tons of coal during the twelve months, in the name of Plutus, how much must they collectively disburse for their "black diamonds" throughout the year? This the before-mentioned Gas Returns show very plainly in the form of "Revenue Account"; so that we have only to lump together all the sums there given under the head of "To Coals (including dues, carriage, unloading, and trimming)," in order to ascertain how much money is devoted annually to the purchase of the fuel required to "lighten the darkness" of this monster metropolis. Accordingly, we find that in 1874 the "Chartered" expended rather more than 600,000*l.* in this manner, the "Imperial" a little over half a million, and the whole of the other companies about 650,000*l.*; or altogether, as nearly as possible, one million and three-quarters of pounds sterling went to provide merely the fuel for the united gas-works of London,—the coal, "common," as well as "cannel" (of which latter commodity only about 6 per cent. is used), thus costing the companies on an average somewhere about 25*s.* per ton. Against this expense, however, we have to set off the income derived from the coke which remains after the coal has been "destructively distilled." As we have said, then, the gross quantity of coke made during the year 1874 by the collective metropolitan companies amounted to about 1½ million chaldrons, and of this very nearly a million chaldrons were sold, and the remainder (or rather more than one-third, instead of one-fourth, as is generally said to be the proportion) used for heating the retorts. Now, by the accounts we find that from the sale of the million chaldrons of coke, not quite half a million of money was obtained (477,000*l.*); or, in other words, the coke realised within a fraction of ten shillings per chaldron (9*s.* 7¼*d.*). Add to this 136,000 chaldrons of breeze, which fetched nearly 10,000*l.*, and over 13½ million gallons of tar, which brought upwards of 100,000*l.*, besides nearly 300,000 butts (108 gallons each) of ammoniacal liquor, which produced another 100,000*l.*; and we have to set off an income of just about 710,000*l.*, derived from the sale of the residual products of the gas factories against an expenditure of 1,750,000*l.* for the coal required for the gas itself. Every ton of Newcastle coal is said to produce 1 chaldron of coke (the yield, however, is about one-fourth more); 4 bushels of breeze; 12 gallons of tar (but the yield is hardly more than 9½ gallons on the large scale); 10 gallons of ammonia liquor (whereas the yield is really about double); and 10,000 cubic feet of gas.

We have now only to point out the gross sum derived by the collective companies from the sale of the 14,000 millions of cubic feet of gas produced in the course of the year, in order to arrive at what is called the aggregate "gas rental" of the metropolis. This is usually said to be two millions of pounds sterling. The gas accounts, however, tell a very different story. Let us see. On the creditor side of the "Revenue Accounts" before referred to, we have the items "sale by gas" given in connexion with the returns of the several companies; and putting these all altogether, we find that the aggregate amount which the entire nine London companies derived from this source, was within a fraction of three millions sterling; that is to say, very nearly 2,875,000*l.* was obtained from the sale of "gas per meter," and within a fraction of

the extent of the works,—the buildings and machinery, the retort-houses and retorts,—the furnaces, coal-sheds, &c.,—to say nothing of the gas-holders required for such a business. Why, only a few years back, a gasometer, capable of holding half a million cubic feet of gas, was looked upon as a monster. At present, however, the gas-holders have to be at least double their former dimensions, and are often, indeed, of more than a million cubic feet capacity,—being not less than 140 ft. in diameter and 70 ft. high (the diameter should be always double the height), or very nearly as large as a good-sized amphitheatre.

We must break off here for the present.

NEW ATTRACTIONS AT THE EASTERN MUSEUM.

On the occasion of the opening of what is now called the Eastern Museum, at Bethnal-green, the correspondents of more than one of our contemporaries prefaced the accounts which they gave of those magnificent collections of rare and precious objects with which the courtesy of Sir Richard Wallace enabled the officers of the department to give such *éclat* to their new field of display, with such descriptions of the locality and its inhabitants as might have been suitable in the case of a newly-discovered savage country. With that love of the sensational which has so much affected the lighter literature of the last score or so of years, was blended an entire forgetfulness of the fact that the inhabitants of a large section of the capital of the British Empire might dislike being held up to the world, as if it were a wonder that their habits were not anthropophagous. This oversight was very sharply resented in the district; and, in almost every public-house or place of refreshment, placards in the window soon declared, in very large letters, "The so-and-so newspapers not taken in here."

With the memory of this misadventure of more than one of our contemporaries fresh in our recollection, we are not likely to expose ourselves to the charge of coming forward as discoverers, or re-discoverers, of Bethnal-green. But whether the former mishap be the reason or not, a very inexplicable degree of neglect has befallen that admirable institution,—not neglect, we are happy to say, on the part of those for whom it was established. While Sir Richard Wallace's collections were there, as many as 12,000 visitors have entered the building in a single day, after the hours of six p.m. This was at the first blush, and under circumstances of extraordinary attraction. But the visitors during September, 1874, as we learned from the table by the door of the Museum, amounted to about 40,000, and those for last month show no signs of falling off. No doubt that Bethnal-green is a spot very unlikely to be visited, excepting by those who reside, or have business, in the vicinity. But that is only a vindication of the sagacity which selected the spot for a local centre of that teaching by the eye, which we are happy to believe is doing good work among our rising generation.

At the present moment, besides the gifts and purchases which form the permanent adornments of the Eastern Museum, and a collection of an industrial character to which we shall presently refer, no less than nine loan collections are displayed to the public in its galleries. All of these are of great merit and value, and as to at least three of them, each, in its own branch of art, possesses a several claim to the title of unique.

Of these collections, that which possesses the highest degree of importance, not only from an artistic, but also from a philosophical point of view, is the series of 1,247 objects lent by Colonel Lane Fox, and displayed under the very unfortunately chosen title of the Anthropological Collection. On the principle of not looking a gift horse in the mouth, we are aware that we must not challenge the right of the gallant officer to give any name that he chooses to a private museum,—for it is museum rather than collection,—which it is matter of wonder, as well as of admiration, to find amassed by one man, and that a man young enough to look forward to, we should hope, a good half of his work. Neither can we contend against the grammatical truth of the adjective in question. All that relates to man is, in a sense, anthropological. But persons in general are somewhat apt to associate that long and ugly word with fierce and angry disputes as to the possibility, or impossibility, of a lineal descent from some theoretic great-great-great-grandfather in the form of an ape. Ethnological is, perhaps, quite as hard a word as anthropological; but it is one that has, to some extent, if only by the aid of the British Museum, got hold of the public ear. Some people, indeed, have a dim idea of a sort of schism amongst the ethnologists, and of the erection of the anthropologists as a new heresy, more advanced, as the phrase is, than the old orthodoxy of that mysterious philosophy.

But if, instead of the long, hard word, Colonel Fox's catalogue had simply invited us to the examination of a series of weapons, as used among savage tribes, from the simplest and most ancient to the most complex,—if it had indicated that not only war and the chase, but canoe-building, boating, ornamentation, formation and use of tools, instruments, and weapons of all kinds, and all materials, and the customs and habits of various tribes of mankind, were all illustrated by a collection arranged in so comprehensive and masterly a plan as to deserve the character of unique,—how many distinct groups of visitors would have been attracted by the announcement? The soldier, the sailor, the boating-man, the mechanic, the tool-maker, the gunsmith, the sword-cutler, the cutler in general, the boat-builder, the carver, the decorator, the lover of tales of travel for their picturesque illustrations, the philologist, who takes interest in the localisation of distinct forms of speech,—each of these, and many other special workers and thinkers, will find much that is highly instructive in this admirable collection. We must not, for the moment, pause to enter into its details, which we hope to have a future opportunity of treating; but we hasten to bear tribute to its high and enduring value.

As connected with industrial art, perhaps the highest rank must be assigned to a collection which is now only in the course of formation. It is one intended to illustrate the use which is made, or which may be made, of articles formerly regarded as useless; or of the scraps and shreds produced in the process of manufacture.

Thus, one jar contains the dark and unsightly stems of the esparto grass, long regarded as much such a weed as the couch grass, which all good farmers exterminate. The next jar contains a sample of the pulp formed from this grass. (Alongside of this ought to be placed a wasps' nest, which is formed of a substance very closely resembling pulp,—the insect-made paper of these hymenopterous manufacturers.) Then comes the paper itself. On another shelf we have the bark of the cork oak, as stripped from the tree; then a sample of the finer cork used for champagne corks; then specimens of cut corks for bottles; then leaves of cork, which are used by one manufacturer for making hats, unrivalled in their lightness and comfort. These leaves may be cut so thin that 600 go to the inch. Then come chips of cork, for stuffing mattresses and life-buoys; and, finally, cork dust. Side by side with this, is boxwood dust, used by jewellers for cleaning gold articles. Then comes ordinary sawdust, from the saw-mills; and so again we come to paper. The brittle paper used by the cheap newspapers, which will neither take ink properly, resist the least pull, nor even burn, is made to a great extent out of wood.

It is obvious that if this collection be exhaustively carried out, and kept up to the level of the discoveries of the day, a boon of no trifling value will be given to the workman, the inventor, and the practical mechanic. The great barrier to the progress of invention amongst ourselves is the ignorance of the inventors of what has been done, and of what is required. Inventors, as a rule, are found amongst men who do not read. With all that has been done by the devoted assiduity of Mr. Bennett Woodcroft and his fellow workers to make the information of the Patent Office accessible to every one, this great stumbling-block to useful invention is still unremoved. Nothing would do so much to serve the man of real inventive genius as a good exhibition where he would see at a glance, without poring over books, all that had been done with a given material—and could thus satisfy his mind as to what yet remained to be done.

From the great philosophical collection of Colonel Lane Fox, and from the nascent industrial collection from which, under due care, so much may be gained for mechanical and manufacturing science, we turn to a third subject,—an art-collection, of a merit, in its special line, unparalleled in this country. We refer to the collection of between 200 and 300 oil paintings, water-colour drawings, crayon drawings, and pencil sketches, the property of Miss I. A. James, which have been lent to the Museum. We are not aware of any gallery in Europe, with the exception of the Louvre, where so valuable and instructive a series of designs can be examined without the trouble and inconvenience of referring to drawers and portfolios. The special value of original sketches is, that they show us the artist at work. People are accustomed to speak of the genius of the painter, the sculptor, the poet, the orator, or the great prose writer. They do well to acknowledge the special genius of each; but they do better when they also remember that this genius comprises, if it does not spring from, the power of taking infinite pains. Thus we see how Raffaelle,—the painter of genius, *par excellence*,—laboured before he attained the inimitable grace with which so many of his creations step or float upon the canvas. In many instances,—that, for example, of the cartoon of the Miraculous Draught of Fishes,—precious scraps of paper have been preserved on which the artist discussed, so to speak, the subject for his own satisfaction. We see the most important figures stretched first in the skeleton, then nude, lastly draped; we see how a position has been varied, at first slightly, then perhaps by being reversed; and how, from the careful and laboured study of every item of the detail, the perfect grace of each group has been wrought out. The work is not that of a melody played on an oaten pipe; it is the harmony of a whole orchestra of instruments, the separate part for each of which has been separately written by the *maestro*.

What we know to have been the method of the great Italian masters is shown, by the rare skill and good fortune that have accumulated the collection of Miss James, to have been also the method of Watteau. We are too much accustomed to think of his stately or sportive groups as the mere reflexions of the playful fancy of the graceful Frenchman. The drawings and sketches treasured by the present collector show how Watteau worked on paper before he threw the result of his work on canvas. The charming chalk sketch of two sisters shows how he could seize the happy expression or graceful grouping of a moment. The three Mulatto heads close by show how he would try, and try again, and yet again, which should be the most pictorial expression of a countenance not in accordance with our own taste for the beautiful. Again, in his studies of the masquerading figures, of the chiffonnier with his empty basket, and of what we cannot believe to be any other than the inimitable *Polichinello* of the little San Carlino theatre at Naples, the very genius of pantomime, we see a nerve and a grasp of the central features of an ideal character, that denote a very high order of art. There is a beautiful study of a woman dressing, with another close by, who seems about to dress her hair—in fact, who is drawn as so doing, though a little apart from her task, a separate study of attitude. Again, there is a study of girls at music. In fact there is not one of the numerous scraps from the hand of Watteau which does not repay study, and confer delight.

Watteau is more fully represented than any other artist. A series of sketches, of great variety of type, but almost all of only one degree of interest and merit, and that the highest, illustrates a whole gallery of Flemish and Dutch painters. In almost every instance we admire these artists more in their use of the lighter touch proper to pencil, crayon, or water-colour drawing, than in their better known works in oil. One reason for this may be that the sketches are as the artists left them; the paintings have undergone the additional touches of that great leveller,—Time. F. Hals is shown in a noble autographic sketch, black chalk on grey

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265,000*l.* from "public lighting and other contracts,"—the precise gas-rental of the entire metropolis thus coming to just upon *half as much again* as it is commonly computed to be, and being really 2,939,400*l.*, rather than the simple two millions it is generally taken at.

It would appear, then, that though the coal for the entire gas of London costs one million and three-quarters of pounds, the sums derived from the sale of the "residual products" reduces the net expense to one million of money; and that as much as three millions sterling are derived from the sale of the gas produced by the million's worth of coal. Still, it must, in all fairness, be borne in mind that the cost of the *manufacture* of the gas itself is not included in the above calculation; neither is the cost of laying down and repairing the mains; nor that of cleaning and lighting the public lamps; nor that of the salaries paid to superintendents and officers; nor the expenses of management, nor even the repairs and maintenance of works and plant; so that it is but right to warn the reader against jumping to a hasty conclusion that the rate of profit on the gas produced is the difference between the cost of the coal required to produce the gas and the rental obtained from the sale of it.

paper. Van de Velde makes his ships float in water-colour. Guardi contributes a striking bit of old Italian architecture, the Loggia del Lanzi at Florence. There is the original sketch of the picture of Abraham's dismissal of Hagar and Ishmael, by Claude Lorraine. There are dead cranes by Weenix,—not a group, but a series of studies; not the very life, but the very birds after the life has left them. A breeze seems to rustle over a scene drawn by Bakhuyzen. A river side subject by Jan Breughel, in water-colours, shows the careful, accurate, and delicate drawing of this artist; the unexcelled finish of whose work in oil worthily earned him the name of Velvet Breughel. The delicate drawing of this sketch very closely resembles the detailed workmanship of Meissonier. Of Jan Steen there is a very characteristic alehouse, in sepia. There is a battle-piece by Borgognone, full of life and "go," and in which, contrary to the almost universal custom of painters and sculptors who represent rearing or prancing horses, the ear or the nose of each animal is in advance of his fore-feet. This is invariably the case with the living horse, except, in one instance out of thousands, of artificially-trained and highly-curbed steppers in harness. There is a "Temptation of St. Anthony," by Salvator Rosa. The pigs are semi-diabolic, and so is the saint,—not worth, one would conclude, the trouble of tempting. It is a good instance of the brutalising influence of the ascetic spirit on the mind of a great artist. There is a very life-like face, which would not be a bad ideal for Sancho Panza, exquisitely sketched by Vandyck, and a powerful head by Van Eyck, which, if there were no such thing as anachronism, might be taken for a refined Luther. There is a merry dance by D. Vinkaboom, and two fine sketches by Ruysdael, one of a bridge over a torrent, and the other a riverside landscape. Although these are evidently drawn by the hand of a master of no ordinary power, as well as method, they do not give the promise of the exact style of the oil paintings of Ruysdael. A pair of Van Ostades are followed by a pair of Cuyps, the latter in pencil. There is a noble study of trees by Waterloo, and a sheet of paper on which Rubens has carefully drawn, from the life, a lion in four different attitudes—a study worthy of Landseer. Again, in the careful study of horses by Wouvermans we see how far the favourite animal of this painter is from being a conventional piece of filling in. These sketches are by a man who not only knew, but loved, that noblest dumb companion of man. Both, Wynants, Van Laas, Van Swanevelt, N. Bergheim, Van de Velde, Jordaens, Bakhuyzen, Van der Neer, are each represented, and charmingly and characteristically represented. There is an instructive study of foliage, by Claude Lorraine. Three capital and rather highly-coloured water-colour drawings by Van Ostade have more humour with less vulgarity than characterises most of that master's works in oil. The graceful elegance of a Europa, by N. Bergheim, contrasts with the Dutch Vrows, one of whom (in a sketch by an artist whose name is illegible in our note) is drinking from a long glass that would win the heart of any collector of *bric-a-brac*. Turning to the west end of the gallery are again numerous and very fine sketches by Watteau.

English scenery is depicted by Girtin, De Wint, Turner, D. Cox, Edridge, Bonnington, W. A. Hunt, W. Collins, and Constable; English portraiture and *genre*, by Stothard, Sir T. Lawrence, Geddes, Wilkie, and W. H. Hunt; English painters of foreign scenes, and of architectural elevations and interiors, by Prout, Chambers, De Wint, and others, whose names we have given above. There is an admirable coloured portrait of Rowlandson, the caricaturist, by G. H. Harlow. The delicacy of taste indicated by the somewhat sensuous physiognomy, which sparkles with fun, would seem to promise something better than the style of depiction with which the collectors of Rowlandson's prints are familiar. The "Old Fisherman," by Hunt, is drawn in a full, bold, well-toned water-colour, that recalls the manner of Fortuny. A copy, by Geddes, of that head of Vandyck when young, of which the authorship has been disputed, recalls the original very vividly. Sir D. Wilkie's "Old Woman" is as carefully painted as, and far less ugly than, the most wrinkled hag admired by Dutch painters.

The bright *espiègle* face, so well known from the engraving, of Miss Manners Sutton as Phœbe, is far more attractive in the original sketch by Chalons, than in any reproduction.

The graceful pierced tower of St. Onen, one of the finest ecclesiastical buildings in France, or in the world, has been drawn by Edridge, once alone, and once as it groups with the Hôtel de Ville at Rouen.

It is evident that an extraordinary combination of good judgment and good fortune has fallen to the lot of the collector of this noble series of original sketches. Their value as a whole it is not easy to exaggerate. A very large proportion of the best Dutch and Flemish painters are so illustrated, by their original sketches, that these well-known masterpieces will be far better understood by the careful student of this collection than can be the case otherwise. Rembrandt is almost the only first-class name in this group that struck us by its absence. We are unaware of any of the circumstances under which the collection has been formed or lent to the Museum; but no one anxious for the education of a school of artists in this country can fail to wish that so rare a treasure should be secured, unbroken, for the nation. The educational value of our Flemish and Dutch paintings at the National Gallery would be more than doubled by the juxtaposition of this very complete series of original designs, and careful as well as careless studies, many of them by artists as yet feebly or not at all represented at Trafalgar-square.

We have been led, by the extraordinary interest of its contents, to dwell so long on the subject of the collection lent to the Eastern Museum by Miss James that we have no space left us in which to describe the splendid collections of Mr. Isaac Falke, Mr. A. W. Franks, Mr. J. Soden Smith, Consul Hutchinson, the late W. Cosier, and Mrs. Hamilton Gray. We the less regret having to defer some notice of these various groups of valuable and well-selected objects of art, from the hope that a catalogue will soon be in print, at least of the Franks collection, in which the potters' marks will be chronologically described. We shall have other opportunities of giving our country readers some account of the as yet undescribed treasures now lent to the public by their owners. And we strongly advise all those to whom it is possible to form their own judgment by a visit to the collections themselves.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting of this Institute for session 1875–76 was held on Monday evening last at Conduit-street, Sir G. G. Scott, president, in the chair.

The following members were balloted for and duly elected, viz.,—As Fellows:—Mr. W. O. Chambers, of Lowestoft, and Mr. H. N. Sheffield, of Whitehall. As Associates:—Mr. W. J. Ebbetts, of Essex-street; Mr. C. C. Petley, of Sevenoaks; and Mr. W. H. Syme, of Watford.

Mr. Eastlake, the secretary, announced the decease of the following members:—Mr. Edward Roberts, F.S.A., fellow; Mr. Richard Tress, fellow; and M. Labrouste, Hon. and Cor. Member. Professor Donaldson also announced the death of Mrs. Owen Jones.

The Secretary announced several additions to the library of the Institute, and some donations to the library fund, including 10*l.* 10*s.* given by Mr. Ebenezer Gregg. Professor Hayter Lewis, who filled the chair of the Hon. Sec. for Foreign Correspondence, in the absence of Mr. F. P. Cockerell (who was said to be in Ireland) announced several foreign contributions to the library; and Professor Donaldson, on behalf of Sir Digby Wyatt, presented one copy each of "An Architect's Notebook in Spain," and "Report on the Vienna Exhibition." The various donors were thanked by acclamation.

Mr. W. H. White called attention to several errors in the "revised" list of members just issued, and Mr. Eastlake explained that the errors were due to the fact that the printers had lost the corrected "proof" of the list before the corrections had been made. However, the list would be re-issued.

PRESENTATION OF MR. T. H. WYATT'S PORTRAIT.

The Chairman said he believed that Sir Digby Wyatt (whom he was very glad to see in restored health) had an interesting communication to make.

Sir M. Digby Wyatt said he was always glad to do anything to further the interests of the Institute, although he could no longer take any very active part in its proceedings. On the conclusion of his brother's term of office as president of the Institute, he (Sir Digby) had announced his intention of presenting his brother's portrait to the Institute, and now, after certain difficulties which appeared to be inseparable from the production of works of art of this kind Mr. Richmond, R.A., had succeeded in producing a portrait which, he thought, would be as entirely satisfactory to the members of the Institute as it was to Mr. Wyatt's family. He begged to ask the Institute's acceptance of the portrait, and, though it possessed comparatively little interest at present, while his brother was living, there would inevitably come a time when its value and interest would be enhanced, as affording the only means of looking upon the features of their past president.

Mr. Beresford Hope, M.P., in moving that the gift be received by acclamation, expressed his gratification that with the presentation of this portrait the Institute now possessed portraits of all its past presidents.

Professor Donaldson, in supporting the motion, said that Mr. Wyatt would live, not only in the very admirable and artistic portrait just presented to the Institute, but in the numerous important works which he had been called upon to execute, notably the new Exchange at Liverpool.

The President, on the part of the Institute, thanked Sir Digby Wyatt for the gift, expressing the hope that both Sir Digby and his brother would long be spared to be with them.

THE PRESIDENT'S ADDRESS.

Sir Gilbert Scott then proceeded to deliver his opening address. He said that at the present time there were not many interesting subjects upon which he could touch, and he did not intend to say much on the routine work of the Institute, for it was not necessary to recapitulate facts which were known to all the members, nor to descant upon reports which had been already discussed and thrown aside. He looked back with great satisfaction on the presentation of last session's Royal Gold Medal to their honoured and respected member, Mr. Edmund Sharpe. In his (Sir Gilbert's) last address, a year ago, he referred to the appointment, during the previous session, of a special committee to consider and report as to the condition of the Institute. He had reason to know that that committee had most sedulously devoted themselves to the duty allotted to them. They had held twenty-one meetings, often very protracted, and had placed themselves in communication with other cognate societies. Their report had only been presented to the Council that evening, and was as yet unopened, but a special meeting of the Council would be summoned for its consideration at an early date. Were he acquainted with the recommendations of the committee, he should necessarily be precluded from referring to them on that occasion; nevertheless, he might perhaps be excused for confessing his decided conviction that the Institute had not assumed that strong position which it ought to assume; that it did not to the fullest degree promote the cultivation of the art of architecture; and that there was a danger of paying too much attention to their interests as a profession to the exclusion of their demands as artists. He had no doubt, however, that the committee had given careful attention to these points, and he hoped they had suggested some means by which the proceedings of the Institute would be made less a matter of routine; and that some method would be devised to cause a larger number of the leading members of the profession to take a more active part in the work of the Institute. It was not to be desired that the Institute should go on from year to year like a mere piece of clockwork. He wished more of the leading men of the profession were emulous of office in the Institute, and of seats on the Council. He knew that professional engagements were great barriers to this, but he also knew how strong was the feeling outside, and among the younger members, that the Institute was too much like an automaton. He was not sure whether the self-elective character of the council was satisfactory, and it was fairly open to question whether a portion of the council should not be elected by the junior portion of the Institute, and whether there ought not to be elected by the general body year by year an honorary secretary in addition to the present secretary, the honorary secretary necessarily representing the current tone of the Institute in a greater degree than could be done by the permanent secretary, who would relieve the honorary secretary of the more arduous routine work, in the same manner as was carried out in some of the great Government departments, which had Parliamentary secretaries and under-secretaries as well as the permanent officials, thus preserving a certain continuity. It was also to be desired that

the Institute should place itself *en rapport*, not only with other architectural societies, but with all those societies which devoted themselves to matters of archæology and art generally. Some of those societies were of long standing; others were representatives of modern growth, and yet, while many of the members of the Institute took an active part in their proceedings, the Institute had never, to his knowledge, in its corporate capacity, taken any cognisance of the existence of such societies. Reverting to the financial position of the Institute, it was in a fairly cheering condition, and the number of members showed a reasonable increase, though he had to record an unusually large number of deaths. He could only briefly notice the careers of a few of their deceased members, leaving it to the Honorary Secretary for Foreign Correspondence and others to supply some notice of other members recently deceased. Firstly, he would mention the late Professor Willis, who (though his special subject was mechanical science, of which he was Jacksonian Professor at Cambridge) at an early period turned his special attention to the subject of architectural archæology. His published works, and especially his book on Canterbury Cathedral, evinced his complete mastery of his subject, and, indeed, this might be said of all his lectures and discourses, but, unhappily, the bulk of these were never committed to paper by him, and so would be permanently lost to the world. Professor Willis possessed in a surprising degree every quality requisite for the investigation of architectural history,—a thorough knowledge of architecture itself, and of construction, a facility of reading and interpreting ancient documents, an unequalled power of weighing evidence, and, moreover, a power of restraining himself from going ahead of his evidence. Such a mind as his had never before been brought to bear upon the subject, and probably never would be again. Mr. Billings, another deceased member of the Institute, was intimately acquainted with the ecclesiastical antiquities of Scotland, and his book on that subject was of the utmost value. In spite of all Mr. Billings had done, however, the ecclesiastical antiquities of Scotland constituted a comparatively unexplored field, but he hoped that some one would arise to give to the world Scotland's architecture by rule and line before it utterly perished. He had hoped that this would have been done by Mr. Anderson, but his increasing practice, he was afraid, would preclude the realisation of that hope. The late Mr. J. B. Waring, another deceased member of the Institute, was a very talented colourist, and it was to be hoped he would have many worthy successors. The late Mr. Edward Roberts was well known for his antiquarian tastes. The list of medals and prizes offered by the Institute this session contained two notable additions. Firstly, there was the prize of 40*l.* derived from the fund bequeathed by the late Sir William Tite for promoting the study of Italian architecture. A careful scheme for the appropriation of this prize had been drawn up some time ago, and this year the prize would be given for an architectural design, the subject of which had already been announced. The bequest was intended to promote the study of Italian architecture in the same manner as the study of Gothic architecture was promoted by the Pugin Fund. The second prize was derived from the late Mr. Grissell's bequest, and was of an entirely different character. Mr. Grissell had, as a builder, at one time of his life been in the habit of attending the meetings of the Institute, and although there were many prizes offered by or through the Institute, there were none which could be awarded for a good set of working drawings. For the foundation of such a prize Mr. Grissell had bequeathed a sum of money to the Institute, and the prize would be awarded for the first time this year. Among the prize drawings submitted during the past session, special mention should be made of Mr. Neale's admirable monograph of St. Alban's Abbey. The exhibition of the various prize drawings now required so much space that this session it would be necessary to appropriate one of the lower galleries for the purpose. Leaving this subject, Sir Gilbert said that as his term of office as president was now drawing to a close, he wished to say a few words on one or two topics of general professional interest. Seeing that we, as Englishmen, were favoured with such rich endowments in the shape of architectural monuments, it was clearly not only to our interest, but to the interest of succeeding generations, to preserve those monuments as perfect as possible; and it was just as clear that where the influence of time and the elements threatened to obliterate those monuments, it was imperative that they should be permanently recorded. It appeared to him that measures calculated to insure these two great objects, viz., first, the preservation, and, secondly, the perfect representation of such monuments, should be among the very first objects of such a body as the Institute, which should endeavour at the same time to associate with itself those other societies which were especially intended to promote the study of archæology; for it should be remembered that the favourite aphorism, that "Archæology is not architecture," ceased to be a truism when applied to the study of ancient works. In urging the conservation of old works, there was a marked distinction to be observed between those in ruins or wholly disused, and those which continued to be made use of. In the former class, simple conservation was all that should usually be aimed at, and there was the collateral advantage of freedom from all utilitarian influences or requirements. In the latter class, however, while we had, in the case of churches, the satisfaction of feeling that we were rendering them more fit for their great use, and more conducive to the glory of God, there were always practical requirements demanding due consideration, and the great aim should be to meet the claims of the present at the smallest possible sacrifice, if any, of those of the past. In regard to ruined buildings, the Institute had too great duties incumbent upon it. First, it should seek to influence the proprietors of ruins to take such measures as might be necessary to prevent, as far as possible, their further decay. The provision of coping-stones to prevent soakage of water into the walls was an instance of what he meant. In the second place the Institute should systematically promote the correct and exact delineation of architectural remains, even to the minutest detail. We spared, and our predecessors had spared, no pains in delineating the works of Rome and Greece; then why should we allow the equally beautiful remains of our own country—so far more interesting to us because they were our own—to perish without a record? The Institute was doing a little, by means of its competitive drawings for the Pugin studentship, to promote the delineation of old buildings, but it ought to devise some more systematic means, and that speedily. He could instance many remains, the details of which he found to be, every time he revisited them after the lapse of a few years, fainter and fainter. It need not be assumed that the admission that it was the duty of the Institute to promote the correct delineation of these old ruins would saddle the Institute with the large extra expense which would necessarily have to be incurred. There could be no doubt that if the Institute were to take the initiative in the matter, funds would be speedily supplied by the educated public. But if the Institute held its peace when it ought to be the first to speak, was it to be expected that others would take action? When we came to churches, we had melancholy and disgraceful record. Our churches, during the centuries between the extinction and the revival of Gothic, had for the most part been allowed to fall step by step into a state of sordid and contemptuous neglect, decay, and dilapidation, while they became encumbered with galleries, pews, and all manner of excrescences and interpolations, nothing being, in many cases, considered too mean in character for an old Gothic church. People became conscious of this before our architects became fitted to correct it, and, like Jack, in Swift's "Tale of a Tub," set about ridding their churches of disfigurements before they knew what to substitute for them, and, with every blemish removed, would tear off some fragment of the original fabric and mend the tear with work of their own, if not quite as incongruous, certainly far more nauseating. Soon, however, they got to think they knew all about the matter, and boldly set about restorations, as if the old art had been beyond question revived. They often disputed amongst themselves as to whether restorations should be conservative, destructive, or eclectic, great authorities not being wanting to defend even the destructive system. Meanwhile, even with those best disposed, knowledge was imperfect, and the difficulties of careful and well-considered treatment immense. The promoters of the work were more impressed, perhaps, with the axiom of the first church restorers, that "the houses of God ought not to be less carefully dealt with than our own houses," than with the equally indisputable fact that they had treasures of ancient art and of ancient church history to deal with which demanded the most earnest study for their conservation. Walls and roofs were found decayed, and their entire renewal was urged; changes in ritual, it was said, demanded corresponding changes in arrangement; clerks of the works, builders, and workmen vied with each other in opposing conservative measures, and vie as they would, all kinds of influences combined, in addition to their own shortcomings, to check or frustrate their efforts, so that the result was at the best a mixture of successes and failures, of right decision with compromise. But beyond this, there was another very different set of "restorers," so-called. There was a host of men, not always architects, though men highly respected in other walks, who had taken up Gothic architecture as being the style in vogue, and as a regular part of their stock-in-trade, into whose hands a large proportion of the Gothic churches of the country fell for restoration. The Institute from time to time received communications for its Committee on the Conservation of Ancient Monuments, and quite recently they had heard of a gentleman who had sold an old chained book from his church because it was out of harmony with the new work; and of another gentleman who had removed some valuable monumental brasses in order to secure an uninterrupted space for a new encaustic tile pavement; while a certain noble owner made the very restoration of the churches on his property a piece of patronage, and handed it over as a "perquisite" to one of his agents! Nor was a word of remonstrance often heard against these things; on the contrary, more objection was raised against those who laboured hard to do their duty carefully than against a whole host of those who had ruined our churches so as to make a church tour one of the most sickening of experiences. Happily, however, a remnant remained,—a few churches in each district were yet unrestored, and, as with the Sibylline books, it was worth any price to preserve them. Here and there they would be found to be in a dilapidated condition, but generally they only needed that gentle, loving handling to preserve all that time had spared, and to give them a new lease of existence. Would that all such remnants could be gleaned from the harvest of destruction, and preserved from the destroyers' hands. It would often be possible to preserve old buildings, he thought, if the Institute were, as he had already hinted, more perfectly *en rapport* with the various archæological societies; even when it was found to be impossible to preserve the building, there would be, by co-operation amongst the societies, increased means of securing permanent records and drawings of it. In concluding his address, Sir Gilbert said a great deal had been heard this year about workmen-architects, and it was stated in some quarters that in the abolition of all other architects lay the great hope of English architecture. He ventured, in his first address as president of the Institute, to suggest that a vast deal of what had been done by professed architects was by no means to the credit of the age or the profession; but he now wished to point out the still lower depth which was attained when the architect's aid was dispensed with altogether. There were miles upon miles of suburban buildings in the design of which architects had had no hand. The result was disgraceful, and at the risk of appearing to advocate a self-seeking policy, he ventured to commend the subject to the attention of the Institute.

Mr. J. H. Parker, C.B., having explained some drawing and photographs on the walls, illustrative of the most recent excavations at the Colosseum, Rome,—

Mr. Beresford Hope, in moving a vote of thanks to the president for his address, said he was glad Sir Gilbert had had the courage to speak out his mind. Every one deplored and regretted the mutilations which had been palmed upon the world as "restorations." He trusted that the time would come when all educated people would see that the best of all restoration was conservative preservation. He regretted that the president had passed so lightly over that craze of the day, the "workman-architect,"—the idea that Ignorance should be divinely and miraculously gifted with the power of producing more beautiful things than Education and Instruction. The hideous cheap houses and rows of villas which defaced the metropolis were speci-

mens of what the workman-architect could do when he had scraped together a little capital; and it would take a good many articles in the *Quarterly Review* to convince him (Mr. Beresford Hope) that the workman would become a heaven-born Phidias when he had no capital at all. He thanked Sir Gilbert for his tribute to the memory of Professor Willis, and trusted that Mr. Stuart, who was intimately acquainted with the Professor, would be prevailed upon to give to the world his literary remains. No one was more competent for the task than Mr. Stuart.

The meeting then terminated.

The second meeting of the session will take place on Monday, the 15th inst., when Mr. R. Popplewell Pullan is announced to read a paper "On the Decoration of Basilican and Byzantine Churches."

A BOOK ON WATER-COLOUR SKETCHING.

A GREAT deal of assistance to learners, even tolerably advanced, in water-colour, has been given by Mr. Aaron Penley's little book called "A System of Water-colour Painting"; one among the useful series of shilling books published by Messrs. Winsor & Newton. The book gave no "examples," but furnished the student with an idea of the effects of colours in combination, and gave "schedules," as they might be termed, of the colours which might be used, with most probability of a satisfactory result, in portraying different classes of natural objects and effects. The larger and handsomely got-up book by the same author now published * as a special instruction-book in sketching from Nature, is in great measure an amplification of the small former treatise referred to, but with the addition of chromo-lithograph illustrations, intended further to aid the reader and student, by presenting *fac-similes*, or what profess to be such, of the author's manner of dealing with the colours whose qualities and uses he describes. The value of such illustrations, we may say at once, appears to us very doubtful. Chromo-lithographs cannot really be made to represent the effect and the properties of a water-colour drawing, or to convey any idea of the tones and aërial perspective of Nature; and in the present instance they reduce still more to mannerism the work of an artist whose drawings partake somewhat too much of mannerism in the original medium. They may serve as illustrations to explain the author's meaning, and this will probably be their chief value; certainly we should not recommend students to take them as examples for imitation, a choice which must almost infallibly lead to a conventional style and a representation of Nature according to rule and receipt instead of following her own showing. We have certainly not been in the habit of seeing such tones in nature as are represented in some of these illustrations; though in regard to balance of tone and composition they are instructive enough.

The remarks accompanying each drawing are, of course, of considerable practical value, as the result of many years' experience in the use of water-colour, and the general principles laid down are beyond question. Mr. Penley is very emphatic on the value of a full and accurate pencil outline before commencing colouring, as leading both to the more proper understanding of the details of a scene in the first instance, and the more accurate use of colour subsequently. As far as students and learners are concerned, there can be no question as to the correctness of this view. At the same time it cannot but be admitted that admirable sketches have been made by those possessed of adequate power over the materials, without any assistance from a pencil sketch, and that the power of working altogether with the brush is by no means to be thought lightly of, realising as it does the use of water-colour sketching in its purest form, as a system of representation by washes only.

The remarks on the various colours used by the water-colour sketcher, and their nature and properties, are very useful for reference and guidance; and though there seems to us to be a little too much of the spirit of regarding nature as so much material to be "composed" by the artist, yet we like very much some of the author's remarks upon the influence and interest of the study of natural detail which is induced by the habit of sketching and looking at nature with this view. "I like much to linger," he observes, "before groups of trees, young or old, whether clothed or not clothed with foliage, and by change of position to see the many varieties of form they take, and which of the many would produce the most pleasing composition. There is real pleasure in this,—much to be learned and much to be put in practice. Lessons may be had in many localities whence lessons could hardly be expected to be gleaned, and our daily converse with a common-place scene may be thus fraught with increased interest and pleasure. The ability to draw naturally leads to observation of detail and generalisation, it being evident that this cannot be exercised without a corresponding reflection upon everything presented, as to construction, growth, character, and use. How far this is desirable every one must judge for himself. I can only say that to myself the enjoyment is beyond expression; and often, when walking over what would be considered a monotonous and dreary plain, with a canopy of dull leaden clouds, I am struck with beautiful undulating lines, varieties of tone and tint, with receding distances and aërial perspectives, that produce much to be admired, thought upon, and studied. . . . . Something can be gathered from all we see, if the information conveyed be really sought for."

Heartily sympathising with these reflections, we hope they may have the effect which the writer wishes, of leading others to find and enjoy the same source of pleasure, and have no doubt Mr. Penley's book will be of great use in assisting them in making the most of their materials, provided they take the "chromo" examples as illustrations only, and not as "copies."

The author might have been a little more careful in his use of the English language. There are at least two doubtful or ambiguous constructions in the above quotation; but when we read in the table of descriptions of colours, that burnt sienna is so generally useful that "it were *invidious*" to mention its uses in detail, and that vermilion is "indispensable when required," it is evident the writer is using words without considering their meaning. We should scarcely notice such slips, which, of course, do not affect the value of the book for its own purpose, only that slipshod, ambiguous, and even ungrammatical English is unfortunately exceedingly common in the writing of artists of all denominations, who do not seem to reflect that an ill-constructed sentence is as objectionable and awkward in its way as a piece of faulty perspective.

* "Sketching from Nature in Water-Colours." By Aaron Penley. London and New York: Cassell, Petter, & Galpin.

CHURCH OF ST. JOHN THE BAPTIST, MOUNT BURES, ESSEX.

THIS church, after restoration and enlargement, was re-opened on Friday, the 22nd ult., by the Bishop of Rochester. The old church consisted of a massive tower, 12 ft. by 11 ft., standing between nave and chancel, the former 34 ft. by 19 ft., the latter 30 ft. by 19 ft., the communication between them being by small semicircular-headed openings in east and west walls of tower, only 7 ft. wide and 6 ft. high to the springing; thus the nave was practically dissevered from the chancel and the latter rendered unserviceable for the performance of Divine worship. The tower and nave are of Norman date, but the chancel and porch fifteenth century work. The nave is lighted by Perpendicular windows, probably inserted when the chancel was built; some of the narrow Norman lights, however, still remain. The tower had undergone considerable modification some time during the last century, when, after the removal of the shingle spire (which is stated by Morant in his History of Essex to have been in existence in his time, 1768), the upper part of the belfry had been cased with brick, and the walls raised and surmounted by an embattled parapet. The enlargement has been based on the plan of the old fabric, but the tower has been pulled down, as upon examination it was found to be in a dilapidated and dangerous state. The tower has therefore been rebuilt of larger dimensions, and two shallow transepts have been added. The materials of the old building have been worked in as far as was practicable, the old Roman tiles being re-used in the quoins. The new tower is carried to the same height as the original one, and is surmounted by a broached shingle spire. A small vestry has been added on the north side.

In pulling down the tower, arched recesses were found, one on either side of the tower archway, with indications of their continuation along the nave walls; the extent of the arcading cannot, however, be determined, as by the insertion of the later windows it had been partially destroyed, and was probably then built up. Traces of colour decoration of early date were discernible in all the arches, but which, owing to the rotten state of the plaster, it was impossible to preserve. The only decipherable portion was found at the east end of the nave on the south wall, and of this a copy has been made by the architect, which he intends to present to the Essex Archæological Society. It consisted of three draped figures; two, a male and a female in a standing position,—these were comparatively perfect,—and a female figure in a sitting posture,—the head being wanting. From the general character and treatment of the subject, it appears to represent the meeting of the Virgin Mary and her cousin, St. Elizabeth, the mother of the patron saint.

Of the four bells mentioned by Morant, two only remain; the larger (weighing about 13 cwt.) bears the inscription, "*Sit nomen Domini benedictum*"; the other, "*Sancte Nicoli ora pro nobis.*" It is concluded that the missing bells were sold to defray the expense of repairing the tower when the spire was taken down.

The quoins of the tower, which appeared to be old bricks, 2½ in. thick, were discovered to be tiles of irregular shapes and sizes, and varying in thickness from 1¼ in. to ¾ in., with a lip on the edge, the inner surface being roughly scored with varied patterns. The original use of these tiles it is difficult to determine, but they are doubtless of Roman origin.

Other interesting relics have been found, among which may be mentioned a beautifully-worked piscina sill, in good preservation; a carved label termination; and some Roman ornamental paving tiles, all of which are now in the possession of the rector, the Rev. Nathaniel Davies, M.A.

The works have been carried out by Mr. W. Salmon, of London, contractor, from the designs and under the superintendence of Mr. Thomas Harris, of London, architect.

THE LONDON AND COUNTY BANK, LOMBARD-STREET.

THE chief establishment of the London and County Bank, in Lombard-street, is undergoing an extensive enlargement, and when the works now in progress are completed it will be almost double its present size. The property adjoining the bank at the corner of Lombard-street and Nicholas-lane has been purchased, and on the site an addition to the bank is in course of erection, which will increase the length of the Lombard-street frontage to the extent of about 20 ft., or nearly double the present frontage. This addition is also carried to a depth of about 20 ft. in Nicholas-lane, joining the existing frontage of the bank in that thoroughfare. Immediately to the south, again, the bank is still further being extended to a depth also of about 20 ft., with a frontage to the old churchyard of what was formerly the old church of St. Nicholas Acons, and carried the whole width of the enlarged structure, this elevation being 40 ft. in width. The several elevations of the enlarged building are entirely in Portland stone, elaborately carved and ornamented. The Lombard-street new frontage is about 60 ft. in height to the top of a bold cornice, and contains four stories above the ground-floor, which is lofty, and carried to the foot of the first floor with rusticated and carved piers. The upper floors contain a range of three windows each, those of the first floor being surmounted by pediments, with ornamental piers on each side, whilst the windows of the several floors above have circular heads. Above the first floor, at the corner of Lombard-street and Nicholas-lane, the building is carried up by an angular elevation, set several feet back from the frontage of the ground and first floors. A high-pitched roof, with lofty chimney-shafts, brings up the extreme height of the elevation to about 70 ft. A portion of the enlarged structure stands upon the site where formerly stood the parsonage-house of St. Nicholas Church, and it may be stated that in excavating for the basement of the new building the workmen came upon the rubble foundation-walls of the old church adjoining. The Nicholas-lane frontage is quite uniform in its architectural character and general treatment with the south elevation, and it may be added that all the several frontages are surmounted at the angles with vases.

Mr. Parnell is the architect, and Messrs. G. Smith & Co. are the builders, and the works are being carried out under the superintendence of Mr. G. French, as clerk of works.

WESTMINSTER ABBEY, AND THE STAGE.

KINGSLEY'S LECTURES IN AMERICA.

Of the five lectures delivered by the late Canon Kingsley during his visit to America in 1874, and now published,* with a dedication by Mrs. Kingsley to the American friends who welcomed her husband to their country, the first is occupied with the subject of "Westminster Abbey." It was characteristic of the author that he should have chosen this subject as the first on which to lecture to Americans, who have no such architectural monuments of the past to interest them; characteristic of that reverence for everything that is great and noble in the past, which he combined with so lively and, in the main, so enlightened an interest in the present and future. "Reverence for age," so he commences his first address to an American audience, "is a fair test of the vigour of youth; and conversely, insolence toward the old and the past, whether in individuals or in nations, is a sign rather of weakness than of strength." And he speaks in his own pleasant manner, a few sentences further on, of the gratification with which he had found, in Americans visiting England, this interest and reverence for things ancient; how he had been touched at finding so many of them, as soon as they landed in Liverpool, hurrying off "to our quaint old city of Chester," to gaze on its walls and overhanging houses; how, when repressing the enthusiasm of a lady visitor, telling her not to waste time there, but to go on at once to the British Museum, see its marbles and manuscripts, see the French cathedrals, the ruins of Provence and Italy, &c., he was met with the sufficient answer, "Ah! but you must remember, these are the first old things I ever saw!" For those who have lived under the shadow of these "old things" all their lives, it is difficult sometimes to realise the difference of living where all things are new; but not difficult to imagine how interesting, to those who live in such a new country, must be these time-worn relics of the Middle Ages, the tangible memorials and witnesses of a state of life and thought so distinct from that of the great modern republic.

And as it was at Chester, so, the late Canon says, he found it at Westminster. "He knew few greater enjoyments than showing a party of Americans round our own great Abbey;" and they, no doubt, must have equally appreciated the pleasure of having so genial and enthusiastic a guide. Referring to what has been written on the subject by Americans who have visited the Abbey, he quotes the remarks of Washington Irving, who, in some of his expressions, such as "dusty splendour," hints at a condition of things in the building which is considerably altered now. Indeed, the remark which *Punch* put into the mouth of the travelling American at a cathedral town,—"Stranger, how is it that your big churches in this country are all in such a state of disrepair?" can really be hardly applicable now, in the majority of cases. We may quote the reflections which the late Canon of Westminster made to his American audience in regard to this part of the subject:—

"If he" (Irving) "visited the great Abbey now, he would not have noticed that look of dilapidation at which he hints,—and perhaps had a right to hint,—some forty years ago. Dilapidation, dirt, and negligence are as hateful to us now as to the builder of the newest house outside. We, too, for more than a generation past, have felt, in common with the rest of England, and with all the nations of Northern Europe, that awakened reverence for Mediæval art and Mediæval history which is, for good and for evil, the special social phenomenon of our times; the natural, and on the whole, useful counter-check to that extreme of revolutionary feeling which issues,—as it did in Paris but three years ago,—in utter hatred and renunciation of the past, and destruction of its monuments. To preserve, to restore, and, if not, to copy, as a sort of filial duty, the buildings which our forefathers have left us, is now held to be the very mark of cultivation and good taste in Britain. It may be that we carry it too far; that by a servile and Chinese exactness of imitation we are crippling what originality of genius may exist among our draughtsmen, sculptors, and architects. But we at least confess thereby that we cannot invent and create as could our ancestors five hundred years ago; and as long as that is the case it is more wise in us,—as in any people,—to exhaust the signification and power of the past, and to learn all we can from older schools of art and thought, ere we attempt novelties of our own, which, I confess freely, usually issue in the ugly and the ludicrous."

That is a little too "free" a confession, perhaps; one to which some artists of the day may have a right to demur; but it is not a badly-put justification of the reproducing tendencies of modern architecture. We regret, however, to see that the old sentimental fallacy of the origin of Gothic architecture from natural scenery should have been retailed to an American audience by a speaker who would come, perhaps, to some extent, as a representative of the English education of the day. Canon Kingsley's information and study seem to have been in some respects rather varied than accurate, and he looked at everything more or less from a sentimental and picturesque point of view; hence this picturesque or scenic theory of Gothic architecture, so entirely untenable to those who have studied the constructive history of the style, seems to have had a particular attraction for him, and he several times took occasion to dwell upon it in public lectures, much to the annoyance of those who were better informed, and who have some right to complain that an utterly false theory of the subject should be maintained and repeated by a writer whose literary abilities had gained him the ear of the public. The paragraph in the lecture under notice, commencing on page 19, is not without a good deal of eloquence of language, but we fear it is, in effect, little better than nonsense, which it is vexatious to find stereotyped (to a certain extent) here.

The second lecture in the book touches on a subject which has considerable interest for us, and has more than once occupied our columns. "The Stage as it was once," is the title of an address the real object of which, while describing and commenting upon the characteristics of the Greek drama, is to suggest the idea of what the stage might again be were it more a matter of national interest and less under the sway of mere speculative managers anxious to catch the ear and the money of the more idle part of the population. Perhaps there is not really much in the tone and manner of the Greek drama that we could think of reviving or emulating now, our entire social and mental conditions are so different; but there is a passage in Kingsley's remarks which is suggestive of what we have before pointed out as the great want of the present day in drama.

"The Chorus was then, in Tragedy, and indeed in the higher Comedy, what Schlegel well calls 'the ideal spectator,'—a personified reflection on the action going on, the incorporation into the representation itself of the sentiments of the poet, as the spokesman of the whole human race. He goes on to say, and I think truly, 'that the Chorus always retained among the Greeks a peculiar national signification; publicity being, according to their republican notions, essential to the completeness of every important transaction.' Thus the Chorus represented idealised public opinion; not, of course, the shifting, hasty public opinion of the moment,—to that it was a conservative check, and it calmed to soberness and charity,—for it was the matured public opinion of centuries; the experience and usually the sad experience of many generations; the very spirit of the Greek race."

The modern fashion of drama does not permit, or admit, a Chorus on the stage to express public or national opinion; but if we could have a theatre in which really national opinion and feeling were represented by the auditory,—one in which pieces were brought forward, not merely to pay, but because of their presumed excellence and ability to meet and satisfy the tastes and feelings of the higher part of the English nation, something might be done to raise the drama to a somewhat similar position of national signification and interest. At present the audiences who fill our theatres do not represent the intellect or the mind of the nation at large. This, we should hope, is still above being roused or interested by such productions as form the staple of current theatrical attractions. We still are sanguine that we shall one day see the experiment tried of a national theatre, not solely dependent on profit and loss considerations, where what is produced shall be put forward on its own merits alone, not on its surmised capacity to attract the idlest and least thoughtful part of the population, and fill the pockets of the management. If a theatre were to be established on such a footing, a whole public would, in all probability, be found for it, quite distinct from the public which now throngs to burlesques and realistic light comedy.

Of the rest of the lectures we have been speaking of, the fifth and last, on "Ancient Civilisation," contains a good deal that is well put and suggestive; the whole are pervaded by that manly, sincere, and generous tone of feeling which, even more than his literary ability, gave their author so large a hold on the esteem and respect of contemporary English society.

* Lectures delivered in America in 1874. By Charles Kingsley. London: Longmans, Green, & Co.

WINTER EXHIBITION, PALL MALL GALLERY.

The winter exhibitions at Mr. Wallis's gallery, the twenty-third of which opened this week, differ from the spring collections, in that they consist of the works of English as well as of Continental artists. In the present instance there can hardly be a question that the most important work exhibited is one by an English artist, and the admirers of Mr. Long's Babylonian picture in the last Academy will look with interest and, we may add, without disappointment, at his "Thisbe" (153), in the Pall-mall room. A wall of finely-jointed marble masonry, covered with a decorative inlay, showing archaic figures, signs of the zodiac, &c. forms the background to the figure of Thisbe, who sits sideways on the sill of a recess in the masonry, applying her ear to the crevice where a stone has been loosened. A very pretty dusky maiden she is, with a fillet of gold in her black hair, handsome and expressive features, and a figure carefully studied in pose and proportion, perhaps a little deficient in modelling behind the shoulders, where the profile of the body seems rather rigid and straight-lined. The combination of colour in the whole is most harmonious, only there is nothing in the expression or type of face to suggest a heroine of remote prehistoric antiquity,—nothing but what one might expect to meet with in a Southern girl of to-day; nothing imaginative to associate the subject with the halo of poetry thrown round it from a remote past. That is where modern paintings illustrative of antique life and fable seem to us to fail almost always; painters rather reduce the legend to prose than add a fresh poetic interest to it; nor do they seem to realise in fancy the distinction of physiognomy and expression which must have divided human beings, so remote in time, and so utterly different in circumstances and associations, from their descendants in modern generations. Mr. Tadema is almost the only painter who has consciously endeavoured to revive antique human nature as it may really have existed, and to bridge over the gulf between the society of the ancient and the modern era; most remarkably, perhaps, in that little triple picture of a Roman dinner which hung at the Academy two or three years ago, nearly unnoticed except of the initiated. For the most part, classic names to pictures, now-a-days, are mainly an excuse for a pretty figure, or a pretty title to a figure; and Mr. Long's picture, good as it is in many respects, is no exception.

Next to "Thisbe," and a sufficiently strong contrast to it, is a small picture by Mr. J. Morgan, remarkable for simple and genuine pathos, under the title "Gone!" (157). A labouring man and his young wife bow their heads together in mournful sympathy, at the moment after witnessing the death of their infant child. The room is half-lighted by a candle, half by the morning light struggling from behind the window-curtains. The idea is no uncommon one, but there is a simplicity and directness in the artist's way of telling the story which is not so common, and a tenderness of feeling in it which makes it only partially mournful. It is significant to compare the work near it by Mr. F. Holl, "Doubtful Hope" (163), which, in spite of its title, is one of the most utterly hopeless pictures one could imagine,—a wretchedly sickly-looking woman with her child waiting in an equally wretched-looking druggist's shop for the making up of some prescription; there is a certain power in this, but it is an instance of studied "miserableness," even down to the cold, repelling tones of the colouring, which at once strikes one as manufactured pathos, without any redeeming or consolatory touch. A fortunate contrast to this is "The Happy Mother" (169), by J. Blommers, one of the best works we have seen by this somewhat unequal artist; it is a small picture, showing a peasant woman laughing over the baby which lies on her knee looking up at her. The painting is remarkably broad and full in style, and the expression and movements of the mother and child admirably rendered. Among other pictures of humble life may be noticed the "Dutch Interior" (136), by Huibers, where two

stout women, evidently mother and daughter, busy themselves over some culinary occupation. The texture of the painting is full and rich, and the artist has contrived to gain warmth and variety of colour while preserving the realism which he has aimed at. "A Little Bit of Scandal" (41), by A. Laupheimer, is a good study of figures in an old tumble-down corner of an old house; and elsewhere the artist shows us himself "in his studio" (75), i.e., in the dwelling of a peasant, and engaged in conversation with a girl whom he is sketching, and who is not without considerable grace in her manner and pose. While on this class of subject, we may particularly notice two small pictures by Seignac, "Dressing the new Doll" and "Thirsty Souls" (60, 66), both child subjects in the style which was initiated by E. Frère, and remarkable for quiet genuine humour and artistic execution; the critical and interested look of the little boy who holds the glass to be filled with water, in the latter one, is excellent. If the visitor compare these with two pictures of just the same size and aim, "Playing at Marbles" and "The Young Cuisiniers" (20, 22), he will have an instructive contrast between the artistic and the merely commonplace way of treating a simple subject.

Mr. F. Goodall's large three-quarter figure of "The Seller of Doves" (64) is the same Eastern woman, with a long flowing robe open at the bosom, whom he has painted several times; his "Early Morning on the Borders of the Desert" (81) is an excellent little work, as real as possible, and full of atmosphere; and the small figures of the goats and their owners, and the blanket-like tents, combine to give a vivid idea of Old Testament life realised: we like the artist much better on this scale than on the over-extended canvases of Eastern landscapes, &c., which he has previously produced. Among other figure-pictures are two half-lengths by Schlesinger, a sort of contrast of high life and low life, of which the latter is the best. "Taking the Veil," by Czachorski (143), is a work of considerable feeling, though not remarkably powerful. Mr. Pettie is vexatious, as he often is, in spending a great deal of trouble and some good painting over a subject no one can take interest in; "The Joy of the House" (19),—to wit, a horrid little boy drumming to his grandfather,—is no "joy" to the spectator. Mr. Forbes Robertson sends a very expressive female head in an attitude of devotion, under the title "Paternoster" (1); Mr. Gow has tried to depict "Malvolio" (6) practising behaviour to his own shadow, and has only succeeded in portraying an ordinary serving-man, though there is excellent painting in the head; Miss Matilda Goodman has made a little "hit" in colour in her rather violent but clever composition of a very green girl tending some very big and flaring "Sun-flowers" (98); Mr. Erskine Nicol sends a couple of Irish figures, which seem to us quite inferior in humour and colour to his old productions of this class. Among the microscopic pictures which certain contributors to the gallery affect in emulation of Meissonier, "Bringing in a Prisoner," by H. Breling (61), is worth attention for the finish and character in the faces of the consequential-looking officers who constitute the principal figures.

We are always inclined to think the last of Manthe's winter scenes that we see to be the best, but we really believe "Winter" (26) in the present collection is the finest we have seen; nothing could be more wintry and more true to nature; the sky is painted with great power and truth of tone. Weber's "Fishing-boats going out, Normandy" (72) is a fine specimen of a windy picture with a swinging sea, drenching in spray the old wooden pier, where a group of fisher-women haul away at a hawser from one of the boats. Lindstrom's "Bavarian Forest" and "Edge of a Forest" (83, 147) are full of feeling and effect; and Stademan's "Scene in Bavaria" (107), J. L. Pickering's "Shadow of a Cloud" (148), and Windmaier's "Clearing up after a Storm" (18) should be looked at; in the latter the strong light on the bank on the right is not quite accounted for, and looks rather like stage effect. There is a good deal that is effective and true in Mr. Leader's large picture "Happy Summer Time" (55); but his "Silver Thames" (11) is not silver in any sense, but very poor tinsel.

"British Workman" for Colchester.—The architect of this building resides in Colchester, and not in Chelmsford, as stated.

THE MANUFACTURE OF HORSESHOES BY MACHINERY.

The making of horseshoes has not until comparatively recent times been carried on by means of machinery, nor have at any former period large manufactories for their production been in existence, each shoeing-smith making his own horseshoes. Up to the second half of the eighteenth century, the occupation of the shoeing-smith was a trade in which the different operations were acquired by constant routine, science never entering the smithy. It was only in 1756 that M. Lafosse somewhat modified the form of the horseshoe, until then very imperfect. Notwithstanding his efforts, however, and the influenced exercised, in France at least, on the craft of the shoeing-smith, by the establishment of veterinary colleges in 1762 and 1763 at Toulouse, Lyons, and Alfort, the shape and quality of the horseshoe have changed very little. It has been said that the horseshoe as it is commonly used might with advantage be so changed as to prevent at least slipping on the pavement of cities. It is true that for some years great attention has been bestowed by eminent makers upon the production of an improved horseshoe, and that especially since the introduction of asphalte pavements a great effort has been made in that direction. A horseshoe said to be specially designed to prevent the numerous accidents and delay caused by horses falling when the paving is damp or wet has lately been invented. This is an india-rubber shoe, said to be so contrived as to be easily put on the hoof or removed, as occasion requires, and asserted to possess the further advantage of protecting horses' feet in winter against the injurious effects of the practice of mixing salt with the snow and ice in streets. The cost of these shoes is stated to be about one-third more than that of iron ones, whilst they are reported to be light in weight and very durable. Whether the new shoe possesses all the good qualities claimed for it, experience alone will show, and judgment must therefore be suspended in the meantime.

But to return to our subject. It is only natural that in times like ours, when everything tends to the employment of mechanical means in all branches of industry, horseshoes should likewise become the subject of experiment. There are at the present time, in this country as well as abroad, several manufactories exclusively engaged in turning out horseshoes with the help of machinery, and the machines invented during the last twenty years—it is about that time since the first machine was brought out—are very numerous. Though they naturally differ much in form and application, in principle they are about the same, the chief attention of inventors being directed towards the production of a perfect bending machine.

At the Paris Exhibition of 1867, horseshoes made by machinery were shown, but not the machines. At that time there were two manufactories in France, one at Ivry, the other at Clichy. Notwithstanding that their articles were made of all sizes and shapes, and sold at the most reasonable prices, they did not find much favour with shoeing-smiths. Some years later establishments were opened at several other places, and their articles sell now readily in France.

The manufacture of horseshoes, whether by hand or power, may be said to comprise the three following operations:—(1.) The making of the iron bar, of a special shape and under special circumstances, called the bloom (*lopin*). To this bloom, although in its general features it resembles an ordinary iron bar, is given the shape required for its ultimate purpose, i.e., the different cross sections and thicknesses of the finished horseshoe. (2.) The bending of the bloom to the required form. (3.) Punching the holes.

The blooms intended for horseshoes are generally made in a rolling-mill. The punching is done either by means of the ordinary smiths' tools, or with well-known machines, such as eccentric-presses, stamp-hammers, &c. The most difficult operation, and one requiring the greatest accuracy and the longest time, is the bending. This must be done by mechanical means, and all the efforts of inventors have been directed towards the construction of machines performing this operation successfully.

It would be beyond our scope and the space at our command to enumerate all the different machines which have been invented; we intend noticing only specimens of their respective types at present in operation. One of the first inventors was M. Mansoy, who brought out his machine in 1859. It is a kind of shears, with two cheeks, which bend the bloom round a model representing the inner shape of the horseshoe. The shears are worked by hand, by means of handles. M. Mansoy has also used power to work his apparatus, and thus obtained the machine in use at the present time. Another apparatus, at present in operation, is that of M. Victor Vezzoli, of Milan, who constructed and patented (1864) a machine which does all the work required. The stamping is performed by one of Thonnelier's stamping presses. The bar is bent on an iron plate, which also bears it while being stamped, the bending being effected by a set of rollers, two of which act directly upon the bar, and bend it round the model, while two others work a pair of cheeks; the latter holding the formed shoe fast while being stamped. Eight years later, in 1872, M. Vezzoli patented a bending-machine which is an improvement upon his first, and which was still further improved in 1874.

M. Mansoy's machine is in use at Grenelle, in France. The whole internal arrangements of the establishment are said to be very practical, and favourable results are reported to have been obtained. Five machines are here employed, viz., Mansoy's horizontal and vertical-acting universal rolling-mill, a bending-machine, two vertical hammers, and punching-machine. To work these machines without interruption, six men are required, one for each of the five machines, and one for attending to the shears and the re-heating furnace. The iron bar, after leaving the mill furnace, enters the rolling-mill constructed by M. Mansoy, and patented in 1866, where it is slightly bent. This mill consists of two rollers moved by cog-wheels in opposite directions, one of them being perfectly cylindrical, the other eccentric, which serves to give the iron bar the different dimensions required. The iron bar, on leaving the rolling-mill, enters at once the bending-machine. This acts by means of two steel moulds closing round the iron bar and giving it the exact form of the horseshoe. The moulds are said to be complicated in their arrangements. They are connected by and provided with several pivots or tenons, which, in consequence of the rapid wear they undergo, through the application of great power for bending, must be repaired or replaced about once in every fortnight. From the bending-machine the shoe passes under the first hammer, provided with a drift; the required holes are made by powerful strokes on the shoe. The latter now glides on an inclined plane to the bed of the second hammer, where it is cooled by a jet of water, at the same time that it is pressed flat by a single stroke of the hammer and the burr at the holes flattened down. By this latter operation the holes are somewhat reduced in size on one side. In order to give to the holes on that side of the shoe which touches the hoof a perfectly rectangular cross section, each hole is once more punched, after cooling, in a punching-machine. The whole of the process is said to be rather imperfect; it has this great drawback, that it cannot be carried on continuously, the construction of the bending-machine involving frequent repairs.

With regard to cost and pecuniary gain in this particular manufactory, we learn the following:—The manufacture is at the rate of 3,000 horseshoes per day (of ten hours), or five per minute. The weight of a horseshoe being generally more than 800 grammes, 125 horseshoes at most weigh 100 kilogrammes, and in order to produce 3,000 horseshoes, twenty-four times 100 kilogrammes of iron is required per day.

The cost of production of 100 kilogrammes of finished horseshoes is estimated as follows:—

	Francs.
Price of the raw iron per 100 kilogr. ...	28
Waste	2
Coal	3
Labour	3
General expenses.....	1
Total.....	37

The selling price of horseshoes weighing more than 800 grammes being 48 francs per 100 kilogrammes, the daily profit arising on that weight is therefore 11 francs. As regards the lighter descriptions, they are sold at from 35 to 50 centimes each, according as the weight varies between 750 and 300 grammes. If we take as

an average 600 grammes and 40 centimes, we obtain in that case 150 horseshoes per 100 kilogrammes, at a selling price of 60 francs, and a profit of 23 francs per 100 kilogrammes. The daily production being at the rate of 3,000, the profit will be for the former (heavier) description of horseshoes 79,200 francs (3,168*l.*) per year, while for the lighter sorts it is at least 165,000 francs (6,600*l.*).

Another manufactory is that of the Compagnie des Petites Voitures. Here the work is performed in the following manner:—1. The rolling by which the iron bar is prepared is done by a very simple and ordinary rolling-mill; 2. The bending is performed by one of M. Vezzoli's machines, as patented in 1874. This machine is said to be more practical than that of M. Mansoy's. After leaving the bending-machine, the horseshoe passes into a punching-machine, which makes the holes. By means of Vezzoli's machine, 2,000 horseshoes may be made per day, of an average weight each of 600 grammes. Taking into account the waste, the total consumption of bar-iron is 1,400 kilogrammes per day. The iron bars, perfectly prepared for bending, cost 34 francs per 100 kilogrammes, or 476 francs for 1,400 kilogrammes. The daily expenses are as follows:—

	Francs.
Price of 1,400 kilogrammes of iron bars	476
Interest on capital sunk in raw material	20
General expenses and coal	28
Rent	2·80
Stoker	5
One man at bending-machine	5
Two men at punching-machine	10
Three labourers	7·50
Two punchers	8
One labourer	3·50
One hammerman	6·20
Total	572

As the 2,000 horseshoes of medium weight turned out daily have together an average weight of 600 grammes each, and a wholesale value of 40 centimes, or together of 800 francs, the manufactory yields a daily profit of 230 francs, which would amount to 69,000 francs (2,760*l.* a year). But as at present the shoes are not sold to the public by the company, they only making enough for their own horses, the gain in reality is much higher.

As in the manufactory first mentioned, the process and the machines employed are said to be capable of improvement. It may consequently be affirmed that this branch of industry, which is only just opening up, but which already yields a handsome profit, may in time be made more remunerative if the necessary improvements are introduced in the machinery.

We are indebted for some of the above particulars to our contemporary, the *Portefeuille économique des Machines*, to the pages of which we refer those of our readers wishing for further information.

THE OPENING CONVERSAZIONE OF THE ARCHITECTURAL ASSOCIATION.

The Architectural Association held its opening *conversazione* on Friday, the 29th ult., in Conduit-street. In addition to the lower galleries usually devoted to this gathering, by the courtesy of the Council of the Royal Institute of British Architects the meeting-room and library of the Institute were placed at the disposal of the Association for the evening. The hour at which the visitors were invited to assemble was eight p.m., and, notwithstanding that a want of courtesy on the part of the tenant precluded the Association from obtaining possession of the lower galleries until six p.m., the preparations for receiving the company were nearly completed by the time announced,—thanks to the industry of Mr. T. W. Cutler and the entertainments committee. In the short time which was available much had to be done, not only in the hanging of drawings, but in suitably disposing the various "exhibits" lent for the occasion, and which were kept for a long time waiting in vans and carts at the door. In the large gallery on the ground-floor were exhibited two very interesting series of water-colour sketches by Messrs. Phené Spiers and F. C. Penrose, illustrative of abbeys, churches, châteaux, and other buildings at La Couronne, La Palud, Lanville, Plassac, Aubeterre, Mouthiers, Cellefrouin, Chalais, Chillac, Berneuil, La Rochefoucald, St. Quentin, Ronillac, Puyperoux, and other places visited in the course of the Association's recent visit, under the guidance of Mr. Edmund Sharpe, to the almost-entirely-unknown (to English architects) Angoulême district. In the smaller gallery, Messrs. Cox & Son exhibited a cabinet and some specimens of metal-work, in addition to a brass eagle lectern which they have just completed for Chester Cathedral. Mr. G. A. Rogers sent some specimens of carving; Messrs. Gregory & Co. a couple of cabinets; and Messrs. Morris & Co. some chintzes and carpets designed by them. Messrs. Gibbs & Moore exhibited a pair of folding-screens, and two or three specimens of their new material for ceiling decorations, as used in the grill-room and other portions of the new additions to St. James's Hall. Mr. Bentley lent some fine specimens of Japanese embroidery, and Mr. Cutler exhibited some cutlery in the shape of a case of Japanese swords. The prize drawings of the Association were exhibited on the walls of the Institute meeting-room. Refreshments were served in the Museum of Building Appliances, and Coote & Tinney's band performed a selection of music during the evening. The names of upwards of fifty candidates for membership in the Association were posted up.

At nine o'clock the President, Mr. J. S. Quilter, took the chair, and at once proceeded to present the prizes offered by or through the Association during the past session. The prizes, which all consist of books to the value stated, were awarded as follows:—

Class of Design prizes for the best and second-best series of sketches submitted in the class during the session:—First prize (3*l.* 3s.), Mr. L. A. Shuffrey; second prize (2*l.* 2s.), Mr. Vyvian Trubshawe.

Elementary Class of Design prizes for the best and second-best series of studies submitted in the class during the session:—First prize (2*l.* 2s.), Mr. S. Turner; second prize (1*l.* 1s.), Mr. C. L. Cadney.

Class of Construction prizes for the best and second-best series of papers submitted at the meetings of the class:—First prize (2*l.* 12s. 6d.), Mr. Sidney Vacher; second prize (1*l.* 11s. 6d.), Mr. A. H. Tiltman.

The Class of Colour Decoration prize, for the best series of sketches submitted in the class during the session, was awarded to Mr. Knight; honourable mention of Mr. Pratt's sketches.

For the Essay prize (2*l.* 12s. 6d.), for the best essay on either of the following subjects, viz.:—(1), "A Monograph of Andrea Palladio;" (2), "The Influence of Material on Gothic Architecture;" (3), "On the Comparative Advantages of Vaulting and Open Timber Roofs," there were only two competitors, neither of whose essays was, in the opinion of the judges, of sufficient merit to warrant the award of the prize.

The Architectural Union Company's prize (5*l.*) for the best series of measured drawings from existing buildings in England, or portions of the same, erected previously to the eighteenth century, was awarded to Mr. Gibbs. A second prize of 2*l.* 10s., given by the Association in the same competition, was carried off by Mr. Burrows.

For the best design for dwellings for the middle classes, arranged in flats, Mr. Avern was awarded the prize given by the Association.

There were three competitors for a prize offered by the Association for the best design for a concrete villa, but although the designs submitted possessed great merits, neither of them was sufficiently in accordance with the conditions laid down, and therefore the judges could not recommend the award of the prize.

For the prize offered for the best design for a chapel for a middle-class college, there were four competitors, but the judges had not sent in their award.

The distribution of prizes concluded,

The President expressed his gratification at seeing so large an assemblage of members and visitors, remarking that if the success of any undertaking could be measured by its popularity, there was every reason to look upon the Architectural Association as a very successful institution, in spite of its numerous critics. The gratifying work in which he had just been engaged might be considered as a finishing-touch of the successful work of last session, of which the picture was now completed, and left to fill its place by the side of many previous sessions. As an earnest work, full of life, and vigorous in its energy, wanting perhaps in tone and mellowness, seeing that it was fresh from the workers' hands, he had no hesitation in saying that it would form a worthy companion of its predecessors. They had now before them the outline of another session, and starting with the advantage of so many examples, he trusted the work of the coming session would be found worthy of its position. The general features of the picture, with some of the tints and shadows, had been already sketched in, and the work was now placed in the hands of the working members, who would proceed to fill in the several details, to each of which was given an individual character; and from the most prominent down to the least conspicuous, all were equally aiming for the completion of the whole. Some mistakes might possibly be made, but working, as they did, in company, each anxious to do his best individually, and at the same time keeping in view the general interest, they hoped to succeed in raising a high standard for the future, so that the profession of architecture, which had long been struggling to assert itself against great opposition, might at length attain that rank among the arts and sciences which was its due. They had numerous difficulties to contend with, but none of them more disheartening than the doubtful position in which they were often placed in the practice of their profession by the uncertainty of public opinion as to the duties, responsibilities, and privileges of an architect. This difficulty, however, was greatly increased by the various opinions held by different members of the profession, from the ethereal irresponsible individual whose ideal was to build fancy free, and decorate all gorgeous in gold and colour, down to the grasping Five-per-cent., who was willing to perpetrate any atrocity, and submit to any authority, "for the usual commission." The cause was partly to be found in the extreme views which were advanced on both sides of the question, and architects could not hope for a better understanding between the public and the profession until the conditions of an architect's services were more clearly defined. Some public companies and committees appeared to look upon architects as so many machines, out of which any quantity of work might be obtained if a sufficient power were called into action, and with these views an advertisement was baited with a 10*l.* note, and it was hoped by casting a line into the stream to secure as willing captives some of the finest specimens, who would then submit to such handling as to make any finny inhabitant of the water struggle to release himself, or perish in the attempt. The bait, however, too often took, and the public-spirited committee for a time enjoyed the success of their enterprise, until, finding that "all that glitters is not gold," and wiser by the knowledge they had gained, they declined, politely or not, the professional skill of their captives, and left them to flounder in their helpless condition. Such, unfortunately, was the "fishy" result of by far the greater portion of the numerous competitions so often invited and so eagerly sought after, by which a great amount of disappointment and vexation was caused, and the profession of architecture brought into ridicule and disgrace. The opposite extreme, however, was equally prejudicial to the interests of the profession: when an architect occupying a prominent position, and having numerous friends, was invited to carry out a building of public importance, and, regardless of every one's opinions but his own, proceeded to dictate in an overbearing and wayward manner how the work was to be carried out. No recommendation or suggestion had any effect; you could "take it or leave it alone," was the only reply. The committee, in sheer despair, at last gave instructions to proceed, but the difficulty only increased, as the unfettered genius was always evolving new ideas, and his wanton ways were a terror to his friends, and a constant trouble to those who executed his designs. The works were carried up, and pulled down again, alteration followed alteration, until, in self-defence, the promoters were compelled to suspend the works, or call in some reliable person to help them out of the interminable maze into which they had been led. This was no fancy sketch, but one which it was to be feared had had very great weight in the formation of public opinion on the subject; and it was earnestly to be hoped that the day was not far distant when a more united action on the part of the profession, and a better *esprit de corps* among its members, would convince public opinion that architects were men who knew their work, and how to do it. But much would have to be done before that could be accomplished; and the Architectural Association, which had enrolled within its ranks nearly 700 of the younger members of the profession, could not feel too strongly the importance of devoting the whole of its energies to the study of those subjects which the architect required to know. Great as had been the success of the Association, its limit of usefulness had been by no means fully attained, and he called upon the members not to relax their efforts in promoting its welfare.

Mr. F. C. Penrose and Mr. Chatfeild Clarke expressed sympathy with the objects of the Association.

Mr. F. H. Fowler addressed a few words to the meeting, suggesting that the members of the profession would do well to look out for and

profit by the many opportunities for the improvement of our street architecture which must inevitably be afforded by the operation of the new Artisans' Dwellings Act. The designs for the workmen's dwellings which had to be erected under the Act ought to show a great improvement on the prison-like blocks of dwellings which had already been erected in some parts of the metropolis.

The company broke up shortly before midnight.

DISTRICT SURVEYORS AND BUILDERS.

A DECISION has just now been obtained at the Lambeth Police Court in favour of builders, which, if generally acted on, will cost builders or their employers very dearly. Mr. H. Jarvis, D.S. of St. Giles's, Camberwell, summoned Messrs. Adamson & Sons, builders, for alleged insufficient notice for the erection of St. Jude's Permanent Church, Meeting-house-lane, Peckham. Mr. Douglas Straight, barrister, appeared for the complainant, and contended that by the 38th section of the Building Act the District Surveyor was entitled to demand from the defendants that they should send him for examination a copy of the drawings and specification for his approval. Mr. T. H. Adamson, who represented the firm, denied that the Act made such a requirement, and said that it was only as an act of courtesy on the part of a builder that the drawings were even shown to the District Surveyor, whose duty it was to inspect the work only to see that the provisions of the Act were complied with; but that in this instance Mr. Jarvis had been offered to see the plans on the works at any time during working-hours.

Mr. Chance, the presiding magistrate, when he gave his decision, said that the question depended entirely upon the notice under the 38th section of the Act, and was whether, besides the particulars given, the District Surveyor was entitled to demand drawings and specification. There were two distinct things mentioned in the section, viz., buildings, and certain other work. In the case of "buildings," it was the duty to give certain particulars, which were specified; that was to say, the "situation, area, height, and intended use." And the Act went on to say, with reference to the "proposed work," the builder was to give "particulars of any such proposed work," but the section made a distinction between "buildings" and "proposed work." He was of opinion that in the case of "buildings," the only particulars required by the Act were the "situation, area, height, &c.," and that plans were not required. Even supposing that that view was not correct, he found that in a subsequent section, the 59th, which left power to the Metropolitan Board of Works to prepare or sanction forms of notices,—and notice upon those forms was to be sufficient in law,—nothing was said about drawings or plans. The Board of Works sanctioned the form of notice given by the defendants, and the section made that notice perfectly sufficient. Looking, therefore, at that fact, he was of opinion that the defendants had complied with the necessary requirements, and he should dismiss the summons. Being asked to postdate his decision, in order that the Building Act Committee of the Metropolitan Board might be asked to consider the matter, Mr. Chance declined to do so, as he felt perfectly clear upon the point. The summons was accordingly dismissed.

Sufficient stress, as it seems to us, was scarcely laid by the magistrate on Section XXX., which says,—"Notwithstanding anything herein contained, every Public Building, including the walls, roofs, floors, galleries, and staircases, shall be constructed in such manner as may be approved by the District Surveyor, or in the event of disagreement may be determined by the Metropolitan Board." It can scarcely be supposed that the Act contemplates the postponement of this approval till the work has been done, rightly or wrongly. And as the approval of the District Surveyor is to be obtained, proper means of forming an opinion must be afforded him. In a parenthesis, we may add that should he refuse to approve, the drawings not having been submitted to him, the disagreement would have to be determined by the Metropolitan Board, who would at once require copies of the plans and particulars, which, under Section LXI., they would, when approved or otherwise, forward to the District Surveyor that he might see the decision of the Board carried out.

What the District Surveyor required in Messrs. Adamson's case was the loan of the drawings for an hour or two at his own office for careful examination. The reponsibilities of a District Surveyor in respect of public buildings is very great, and he would be very unwise to give his approval if denied the means of quiet examination. During a long practice as a District Surveyor we never once found a builder unwilling to submit the drawings for examination.

It *must* be done, in fact. Nine times out of ten, in the case of public buildings, the footings, the thickness of walls as compared with height, the scantling in floors, the construction of the roof, and so forth, are entirely arbitrary, regulated only by the judgment of the architect, and equally open to be objected to by the judgment of the District Surveyor. The builder who refuses to send to the surveyor the drawings of a public building on which he is about to be engaged will find that he has not merely acted discourteously to a public officer, who is under heavy responsibilities, but has subjected either himself, his employer, or his architect, to much inconvenience and loss.

THE DUTY OF GOVERNMENTS AS TO EDUCATION, SCIENCE, AND ART.

SIR HENRY COLE, C.B., distributed the prizes of the Lancashire and Cheshire Union and Institute at Manchester, on the 25th ult., and in the course of his speech he said,—I accepted with pleasure the duty of distributing the prizes of the Lancashire and Cheshire Union which you have confided to me this evening, because it afforded me an opportunity of inviting your attention to a subject which is beginning to have a large national significance, I mean the duty which Governments owe towards education, science, and art. This duty is one of recent growth, not half a century old. It did not exist when the Peterloo massacre, as it was called, took place in Manchester sixty years ago. At that time Manchester had hundreds of houses and thousands of inhabitants, but it had no representatives in Parliament, to declare its wants; whilst Old Sarum, having no houses or inhabitants, had two representatives. Those were days of boroughs of one vote and no vote, satirised in Peacock's novel of "Melincourt," and were represented by Sir Oran Hautton, one of Darwin's prototypes of men. These very rotten boroughs were extinguished in 1830. Governments then knew no duty to education, science, and art; but in 1833 a little spark of duty to education was kindled by Lord John Russell, when Parliament first voted 30,000*l.* towards the promotion of it. In 1837, some 1,500*l.* was voted by Parliament to art; whilst in 1852 some 2,000*l.* was voted specially to science instruction. Now the sum which the people pay and receive back through Government to enable this country to hold its proper intellectual rank among the nations of the earth amounted in 1875–6, for education, science, and art applied to various services, to nearly 3,000,000*l.*, which is only one-tenth of the cost of the national insurance effected through the army and navy. So little has the idea of the duty of Government towards national culture at present entered into the minds of legislators, and so feebly are the relations between the Government and governed understood in this respect, that a Minister, and even an earnest promoter of education, expressed a dread in last session of Parliament that the people were losing their ancient and boasted independence in asking Government for assistance in founding museums of science and art. Even at the cost of a few minutes of time it seems to me worth while examining this view. What is Government now? It is not the Government as in days gone by, even only as far back as fifty years. Is it not the servant of the commonwealth rather than its despotic governor? If a Ministry misreads the wishes of the people now, it gives way to another Ministry. If a Ministry makes a mistake or commits a blunder, it has the grace to retract it instantly. Government is dependent on the general common sense of the people, and being thus dependent on its will, and being, as it were, its chosen trustee, the nation cannot sacrifice its own independence in expressing its own wants for the expenditure of its own funds which it has entrusted to the Government as its treasurer. If I put money into a bank,—and I call the country my bank,—I do not sacrifice my independence in asking for it back again. It seems to me that a demand for means to advance national culture rather shows a spirit of independence than the contrary. The demand for increased and better education, for more and general instruction in science and art, and for the teaching by objects in museums, shows wisdom and advancing independence of character in the nation, and is not at all the cringing of a suppliant for benevolence from a despot. You find the expression of sympathy with this growing demand for counsel and aid in education in the constant utterances of politicians both in and out of Government at the present time; you find it adorning the speeches of the Prime Minister as well as in those of Mr. Cross, the Home Secretary. Lord Derby has again and again told you his views in Manchester on the vital necessity of cultivating science. And I see with gladness that the Chancellor of the Exchequer never loses a public opportunity of declaring his goodwill towards the culture of the people, and intimating his intention to promote it through science and art and public museums when the state of the public revenues enables him to do so. Before the close of the last session of Parliament Sir Stafford Northcote said that we had not yet attained to a perfect system as regarded art education, and that there was a great deal of room for further assistance on the part of the State for the promotion of scientific education. Lately, at Middlesbrough, he said that it is part of the financial policy of the Government that we should aid local bodies in matters of local improvements; that a great deal had been done in London in the way of founding a great central museum and schools of art and science at South Kensington, and something had been done to awaken the desire for local museums throughout the country. He hoped the time would come when we should be able to organise a system by which in all large towns it would be possible to render help in connexion with the great central museums in London, and the local museums which were springing up in different directions. Lastly, much more was wanted in the direction of awakening interest in museums in this country. I have served under many Ministers, Ministers like Lord Granville and Mr. Forster, the late Lord Salisbury and Mr. Henley, good friends of national culture, but in all my experience I have known no united Ministry so desirous of responding to the universal public cry for the promotion of national culture and domestic improvement as the present. They have a House of Commons and the people at their back to enable them to stamp their mark throughout the country for all time. I wish them "God speed" and success.

MESSRS. PICKFORD'S NEW DEPÔT AND WAREHOUSES IN BERWICK-STREET.

AN extensive new merchandise depôt for Messrs. Pickford & Co., at the West End, which has for some time been in course of erection, is now almost completed, and will be opened for business in about a month. The new building is situated on the west side of Berwick-street, a short distance out of Oxford-street, and occupies an area of upwards of 10,000 ft. For the purposes of the building, Messrs. Pickford & Co. purchased a block of property which for many years past had been chiefly occupied as workshops for the manufacture of "antique" and other furniture. The site having been cleared, the ground was excavated to a depth of 16 ft. below the street level, involving the removal of upwards of 6,000 cubic yards of earthwork. In the basement so formed, thirty vaults have been formed, the arches springing from brick-piers from 2 ft. to 3 ft. square, built in Portland cement, and carried down in trenches to a depth of 7 ft. below the level of the basement-floor. The Berwick-street elevation of the superstructure is 80 ft. in height, and about 25 ft. in width. It has been designed, along with the rest of the building, by Mr. Chancellor, and is in what is called the Queen Anne style of architecture. It is built entirely in red moulded Braintree brick, manufactured expressly for the purposes of the building. Above the ground-floor there are three stories, and the elevation is surmounted by a gable. Above the window-heads there are projecting hoods, in moulded brick, with similar projections on each side of the windows and principal entrance. At the south side of the elevation there is an archway which leads to the storing space, and which extends to a depth of 140 ft. from the Berwick-street frontage, and is 72 ft. in width. The extreme rear is covered in with a wooden and glass roof, carried to a height of about 30 ft. from the ground-floor level, and in the central portion of the area large warehouses, carried to the height of the Berwick-

street frontage, are intended to be erected. In the basement there are three hydraulic lifts, which will work up to a height of 70 ft. It should be stated that the floors of the vaults in the basement are formed of cement, and faced with asphalte.

The builder is Mr. C. N. Foster, of Whitefriars, and Mr. Treasure is clerk of works.

THE LATE MR. THOMAS SMITH, ARCHITECT.

We have already mentioned, with regret, the death of Mr. Thomas Smith, of Hertford.

Mr. Smith had a large private connexion, which extended over a wide field. He was the surveyor for the county of Herts, which appointment he held for over forty years, until his death, and he left the marks of his handy-work in most of the public buildings and bridges in the county.

He held for several years the appointment of surveyor for the county of Bedfordshire, but his engagements would not allow him to continue the duties of both counties.

Mr. Smith reconstructed the gaol, lunatic asylum, and smaller buildings in that county. Among his private appointments were those of surveyor to the London estate of the Marquis of Salisbury and that of the Baron Dimsdale, on which latter he erected many private buildings. He executed work in Ireland for the late Lord Ranfurly and Sir Patrick Bellew, and among other buildings there erected the Hospital at Louth.

In conjunction with his son, Mr. Thomas Taylor Smith, he executed several works abroad; the English Hotel at Nice, the Protestant churches at Nice, Cannes, Stuttgard, and Naples, the latter being obtained in competition. Mr. Smith erected also at Cannes several mansions and villas for private owners, and had the credit of always keeping within his estimate.

LEWES WATERWORKS.

In the first week of February this year Messrs. Easton & Anderson, the well-known engineering contractors, commenced making the new well for the above company, and notwithstanding the difficulties they had to contend with, they succeeded in reaching a depth of 140 ft., and fixing cast-iron cylinders for the first 24 ft., in the short space of five months and a half. It will give an idea of some of the hindrances they had to overcome when we state that some days they could not bore more than 6 in. to 7 in.

For the first 24 ft. down, a shaft was sunk, 6 ft. 6 in. diameter (see annexed sketch), and lined with four lengths of cast-iron cylinders, being bolted together at the joints through the internal flanges with 20 bolts, 1 in. in diameter, square under heads to suit holes cast in flanges.

The bottom length of the cylinder, which has a cutting edge at the lower end, is carried down 4 ft. into the solid chalk, which was reached about 20 ft. from the ground surface.

From the bottom of the 6 ft. 6 in. shaft a ⅜ in. wrought-iron pipe, 6 ft. long and 18 in. diameter, is built in with brickwork in cement, as shown, and the boring from this level is continued downwards 15 in. diameter, as will be fully understood by reference to sketch.

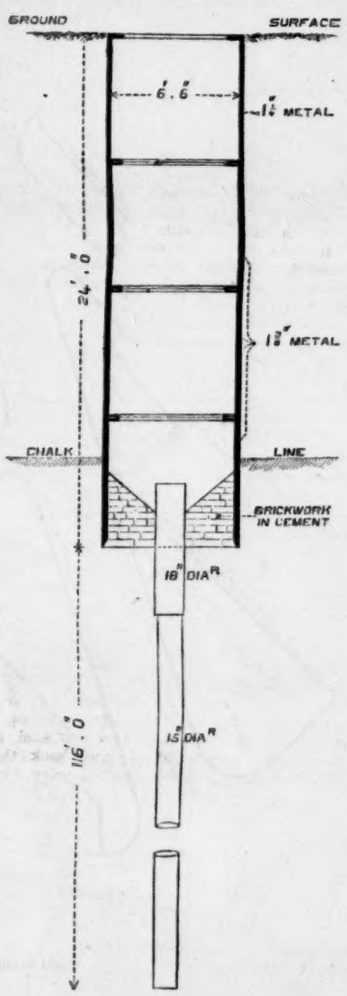
A suction tube, 7 in. diameter, is fixed into the well at the top, and connected with the pumping-engine, which propels the water into a 10-in. pipe running from the works to No. 2 reservoir, near the Black Horse Inn, Saint Ann's; from this point the pipe is reduced to 6 in., and is carried to No. 3 reservoir, on the hill above the County Gaol. In addition to these two reservoirs there is another on Kingston-hills, which is supplied from a pipe 8 in. in diameter, joining the 10 in. near the works.

The whole of the town of Lewes has been supplied from the new well for the last three months.

The engine used for pumping was erected in 1869, and is capable of being worked up to 50-horse-power when forcing into the highest reservoir. It has two cylinders, one high pressure, 16 in. diameter, and one low pressure, 28 in. diameter. The steam, in passing from the boiler, reaches first the high pressure, and passes thence to the low pressure; and, after being used, is condensed, and returns to the boiler, thereby saving much fuel, which to the shareholders means money saved. The stroke of the engine is 4 ft. 6 in.; the fly-wheel is 18 ft. in diameter, and weighs 8 tons 16 cwt. The beam is made of two wrought-iron plates, each 1¼ in. thick. Connected to the beam are two plungers, 13 in. in diameter, that nearest the centre of the beam throwing 350 gallons, and the one farthest from the centre 450 gallons per minute.

There is an older beam-engine in an adjoining room, of twenty-five horse-power, erected in 1863, which has a stroke of 3 ft., used in case of repairs being required to the more powerful engine. The cylinders of this engine are 12½ in. for high pressure, and 15 in. for low pressure, and in them the steam is utilised, as explained above. It has a fly-wheel, 16 ft. diameter, and is capable of pumping about 400 gallons per minute. In the same room with the smaller engine is a three-throw pump, also capable of pumping 250 gallons per minute.

To supply the steam-power, three boilers are



provided, but only one is used at a time, so that repairs can be made to each without stopping the engines.

Much care and foresight appears to have been used in planning this pumping-station, so that there is little fear of any breakdown occurring through accidents; for if one engine failed, others would be used while repairs were being made, and the same remarks apply to the boilers.

The supply of water is inexhaustible, for when pumping 1,050 gallons per minute, the water in the well stands at 12 ft. below ground level, and when pumping ceases, it rises until within 5 ft. of ground line, at which level it stops.

Great praise is due to the directors, the engineering contractors, and the obliging manager, for the care shown in all the working arrangements of these works.

A Fact for Local Authorities.—At the last meeting of the Newington Vestry, the Depôt Committee reported that during the last quarter the removal of dust and refuse by rail from the depôt into the country had been attended by a profit to the Vestry of 45*l.* 8*s.*

NEW PUBLIC BATHS AT PECKHAM.

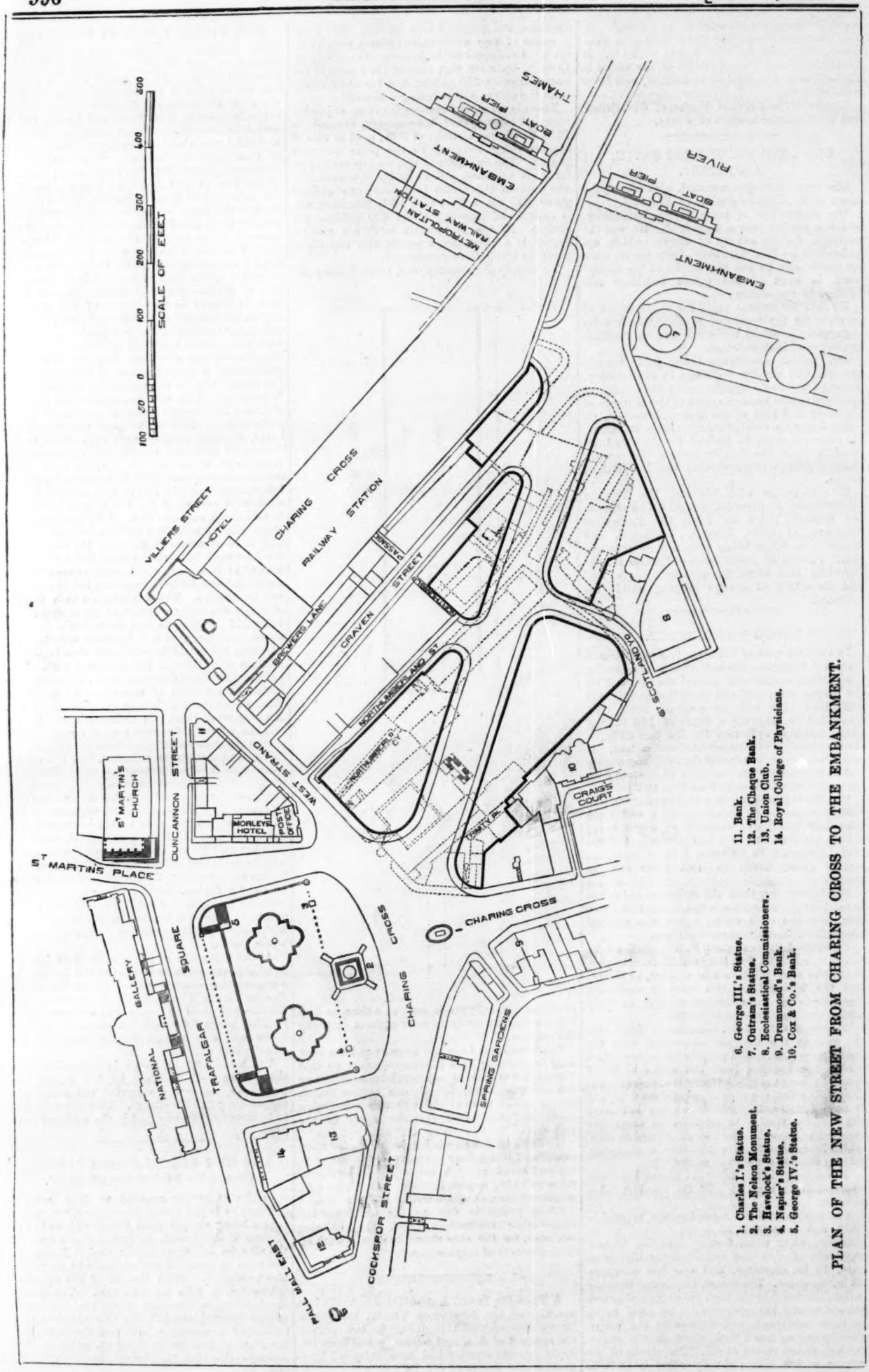
The Camberwell Vestry will, perhaps, be inclined to congratulate themselves at the improbability of their being called upon to undertake the erection of public baths, under the provisions of the Baths and Washhouses Act. These valuable aids to cleanliness and health, which several of the metropolitan vestries have declined to furnish, are about to be supplied in the parish of Camberwell at the cost of a spirited and enterprising capitalist. Mr. Higgs, sen. (formerly of the firm of Hill & Higgs, builders, but who has now retired from business), who recently erected the large swimming-bath at the Kennington Oval, has just purchased a plot of land, upwards of an acre in extent, in St. Martin's-road, Peckham, with the view of constructing upon it swimming and warm baths, upon a very extensive scale. The site, which is on the north side of High-street, and nearly opposite Rye-lane, is almost in the centre of the densely-populated districts of Camberwell and Peckham, and easily approachable. The preliminary works were commenced last week in the removal from the site,—which until now has been a market-garden,—of a large number of fruit-trees, and the excavations for the swimming-baths are now in progress. This will necessitate the removal of about 3,000 cubic yards of earthwork. The plans embrace the construction of two swimming-baths, running parallel with each other, to be designated first and second class baths respectively, and which will be divided from each other by a party-wall. The first-class bath will be 108 ft. long, and 37 ft. wide, with a depth at the shallowest end of 3 ft., the depth increasing to 6 ft. at the opposite end. A flight of concrete steps will run entirely round the bath, which will also have a concrete bottom. On the ground level on each side of the bath there will be an area of 11 ft. 6 in. in width, at the rear of which dressing-boxes for bathers, about 100 in number, will be erected. The second-class bath will be of larger dimensions than that above described, being 127 ft. in length, and 40 ft. in width. The space on either side will, however, only be 8 ft. in width, but it will be fitted with dressing-boxes uniform with those in the first-class bath. The bath will also be of the same depth, with approach steps and a bottom of concrete. At the west side, running immediately parallel with St. Martin's-road, there will be thirty warm baths, on each side of a spacious central corridor, altogether separate and distinct from the swimming-baths, with a separate entrance. At the south-west angle, having its frontage to St. Martin's-road, will be erected the manager's house, a portion of the ground-floor being set apart as the entrances to the swimming and warm baths respectively. On the area at the extreme north end of the site, 153 ft. long and 30 ft. wide, an artesian well for supplying the baths with water will be sunk, and immediately adjoining it will be the engine-house, with a laundry on the east side and a drying-ground on the west. Provision will also be made for supplying the baths with water, in case of a breakdown of the engine, by laying down pipes connecting the baths with the water mains.

At the south end of the site an area 160 ft. in length, and 60 ft. in width, will be laid out as a skating-rink, altogether distinct from the baths. The building will be covered in by an ornamental wooden and glass roof, with open lantern lights running along for ventilation purposes, and the baths will also be still further ventilated by circular side windows.

The baths and buildings in connexion with them have been designed by Mr. Higgs, the proprietor, and will be carried out under his immediate superintendence. They are intended to be completed and opened in the spring of next year.

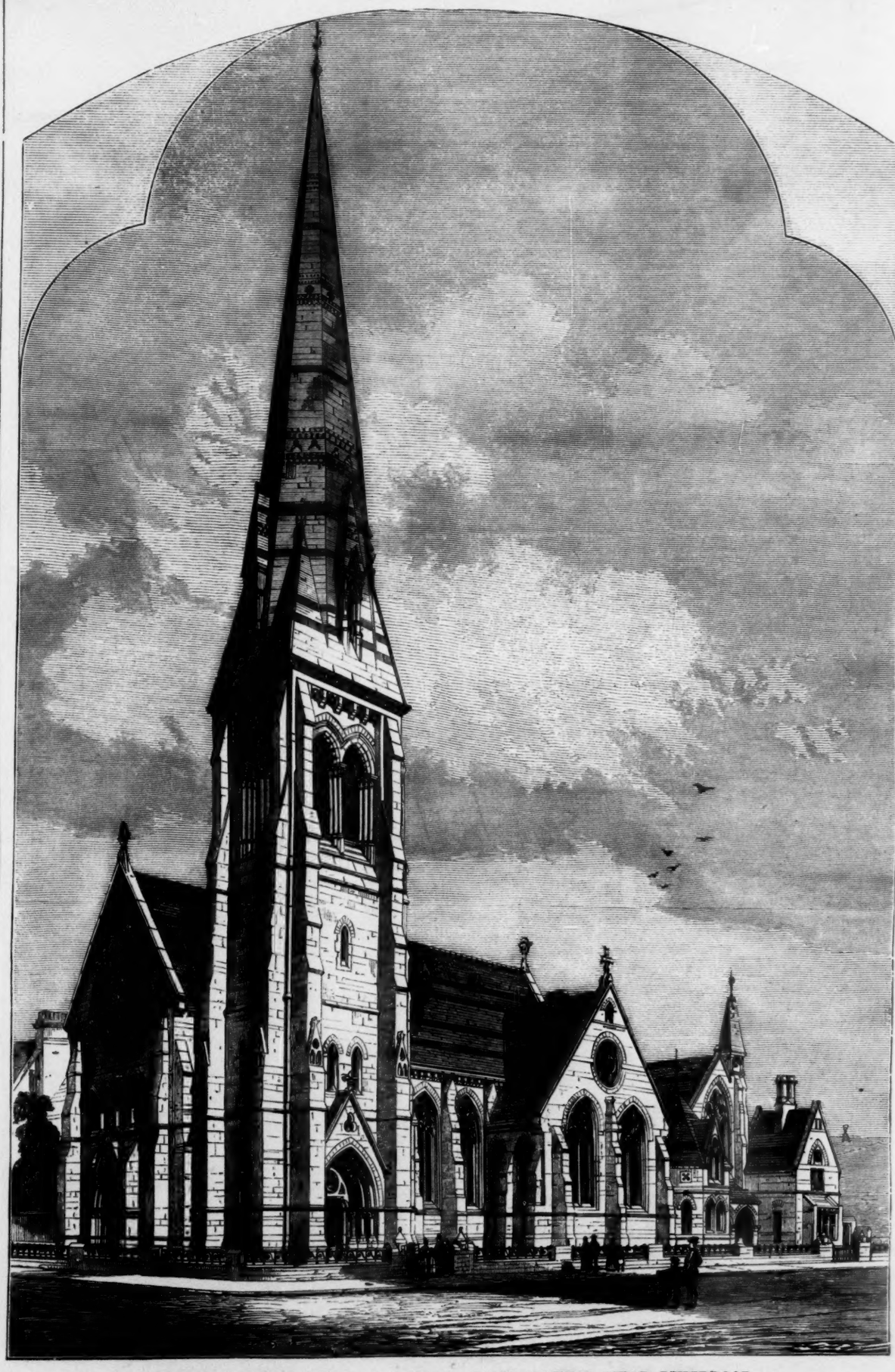
THE NEW STREET FROM CHARING CROSS TO THE EMBANKMENT.

Inquiries having reached us from several quarters as to the exact line of the street which is now being opened from Charing Cross to the Thames Embankment, we judge that a copy of the plan, as laid down by Mr. George Vulliamy, will interest many of our readers, and therefore now publish it. With the aid of the annexed references, it tells its own tale. The works required for the formation of the road are being pushed forward, and in a short time tenders will be invited from persons who may desire to take the plots of land for building on, which, in the accompanying plan, are marked out with a strong line.



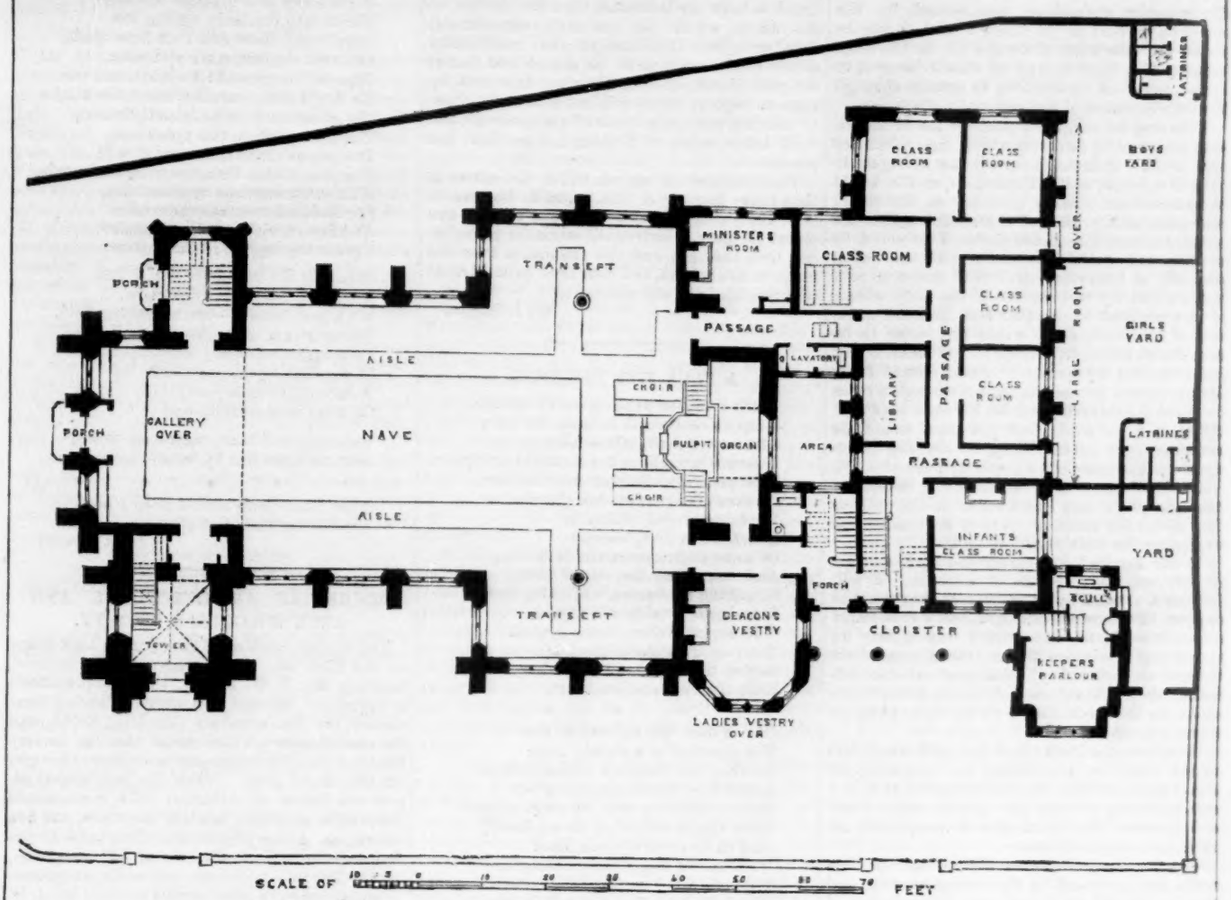
1. Charles I.'s Statue.
2. The Nelson Monument.
3. Havelock's Statue.
4. Napier's Statue.
5. George IV.'s Statue.
6. George III.'s Statue.
7. Outram's Statue.
8. Ecclesiastical Commissioners.
9. Drummond's Bank.
10. Cox & Co.'s Bank.
11. Bank.
12. The Cheque Bank.
13. Union Club.
14. Royal College of Physicians.

PLAN OF THE NEW STREET FROM CHARING CROSS TO THE EMBANKMENT.



CONGREGATIONAL CHURCH, BALLIOL ROAD, BOOTLE, NEAR LIVERPOOL.

Messrs. F. & G. Holme, Architects.



CONGREGATIONAL CHURCH AND SCHOOLS, BOOTLE, NEAR LIVERPOOL.—*Plan.*

CONGREGATIONAL CHURCH, BALLIOL-ROAD, BOOTLE, NEAR LIVERPOOL.

We publish this week plan and perspective view of the above church, now in course of erection from designs by Messrs. Francis & George Holme, of Liverpool, architects, selected in limited competition.

The church consists of nave (with short chancel appropriated to the organ), 100 ft. long and 41 ft. wide; two transepts, each 30 ft. by 13 ft.; deacon's vestry, ladies' vestry, and lavatories, and will accommodate 711 worshippers,—611 on the ground-floor and 100 in the gallery over north entrance. The stone used is the local red sandstone; the tracery of windows out of Runcorn stone. The transept arches are carried on handsome granite shafts, the gift of a friend. Stourton stone finishings are freely used in the interior.

The roof of the church is panelled in pitch pine. The height from floor to apse is 50 ft. The hammer-beam and framing generally are boldly moulded. The benches and fittings are of pitch pine. The organ-screen inclosing the chancel, and the pulpit, are somewhat elaborate.

The contract for the building was taken by Mr. Samuel Webster, of Bootle, for the sum of 5,130*l.*; the schools, tower, and spire being omitted at present.

VENTILATION OF COLSTON HALL, BRISTOL.

At the meeting of the British Association at Bristol last August much complaint was circulated respecting the deficient ventilation of the Colston Hall, as experienced by the audience, in the excessive heat and closeness of the atmosphere during the first general meeting, and at the first *soirée*. Many people were obliged to leave altogether from fear of impending asphyxia or syncope, especially elderly ladies and gentlemen; and the odours of various scents, wafted about by the vigorous flickering of fans, conduced either to increased torpor of the faculties or nervous irritation of the system, according to individual temperament.

This inconvenience was, however, much ameliorated on the subsequent evening meetings by the managers, who caused to be removed some obstructions of brickwork from the passages to admit more fresh air. I have learned that during the winter months, audiences experienced, on the other hand, a disagreeable amount of cold in the air of the hall, so much so as to necessitate ladies wearing their cloaks, and gentlemen their overcoats during concerts held there. The sanitary state of the atmosphere of the Victoria Rooms at Clifton was excellent, the air fresh, and the ventilation good, during the time the great hall was used by the Association.

The system of ventilation adopted by these two buildings appeared to be of quite different character, and the superiority of that of the Victoria Rooms was most manifest to the feelings of strangers.

The Colston Hall has a semi-cylindrical ceiling, like St. James's Hall in London, and there are gratings at the apses or gables at each end, and there is a louvre outside the building on the roof on the top of each gable, and the side or clear-story windows are all closed or fixed ones.

Now the intention seemed to have been that the heated air in this semi-barrel of a ceiling should escape by these gratings in the louvres, but it could never effect this, unless there was free ingress of fresh air by the doors below, which, on the contrary, are generally all shut on public performances.

It would also be impossible that any current of air could enter a louvre from the outside, descend to the grating, and blow out the semi-cylindrical mass of heated air by the other grating and louvre unless by the aid of machinery.

The Victoria Hall has a flat ceiling, and large side-windows round three sides, and these have movable sashes to allow ingress or egress of air, so that a wind on either side of the building could easily influence the internal air of the room by blowing it in at one set of windows, and out by the other.

Here the currents were intended to be horizontal and not vertical, as in the Colston Hall, and they would therefore float along above the heads of the audience, and not up through between them.

In the Victoria Rooms, again, there would be probably no need to keep open the doors below at all, as the air for internal supply had already been allowed access by the windows from the outside.

Similar objections may be urged against the system of ventilation in the St. James's Hall, London, as against the Colston Hall one, and not all the louvres or cowls on the top of the building will make it a bit better, for the reason that they can only be used as means of exit for air at the top when the means of ingress of air at the bottom is equally abundant. It will, therefore, be absolutely necessary to keep all the doors on the floor area open during a public performance in order to keep up an adequate supply of fresh air to produce an ascending current to the ventilators on the top of the ceiling.

A great deal of the difficulty in hearing the president's address in the Colston Hall, therefore, arose from the fact that Sir John Hawkshaw was as much stupified and suffocated as the audience themselves, as was evident from the frequent use of his handkerchief to wipe his face, and to clear the mist off his gold spectacles, which were dimmed with condensed vapour. In order, therefore, to alleviate the condition of the ventilation in the Colston Hall, it would be advisable to put swinging sashes into all the clearstory windows, so as to admit a cross ventilation from side to side, and let the air in, without having to open the doors, and adopt means to cut off the use of the louvres and gratings in the ceiling when they were not required.

In order to illustrate the causes of the

disagreeable sensations experienced by the company present in the Colston Hall, it may be stated that the mass of heated air in the room became of a high degree of elastic tension, in consequence of its inability to ascend through the imprisonment of the external walls.

This may be estimated from the law of expansion of gases by heat, by which one volume of air at 32° Fahrenheit would be enlarged to 1·1222 volumes, at 92° Fahrenheit, and it would therefore exact greater pressure on the chests and circulating organs of the audience than the outside atmosphere at the time. This would be a nuisance quite independent of the extra quantity of heavy (sp. gr. 1·524) carbonic acid gas, formed by respiration in the hall, which, if it amounted to 1 cubic foot in 1,000 cubic feet of air inside, would cause the latter to be considered vitiated (Playfair). Dr. Reid further believes that it requires 10 cubic feet of fresh air per person per minute to pass through a room to make it habitable, and Dr. Playfair says that 2,000 to 3,000 cubic feet per hour would be necessary per person living or sleeping in an apartment to maintain a perfectly pure air.

It would appear that the breathing in and out tends to affect only equal bulks of air, as it is found that the cubic contents of inspiration and expiration are nearly alike in bulk.

If air inspired be represented by 8 volumes of oxygen, 32 volumes of nitrogen, it will be found, altered by expiration to 6 volumes of oxygen, 32 volumes of nitrogen, and 2 volumes of carbonic acid; or in another way it may be stated that 5 volumes of the 100 volumes of air inspired are replaced by 5 volumes of carbonic acid, and as these 100 volumes of air are irrespirable again, so they would have to be replaced by an equal quantity of fresh.

How long the fresh air of the hall would last might easily be ascertained by comparing its cubic contents with the rate of expiration of 12·5 cubic feet per hour per person, who would exhale about 20 cubic inches of irrespirable air fifteen times per minute.

But far worse effects on atmospheric air in a room are produced by the combustion of coal gas, and it will be found that 100 volumes of this will require from 528 to 655 volumes of air for its burning, so that this produces six times worse effects by exhausting six times the amount of air that respiration does.

The products of the combustion of 100 volumes of coal gas would replace further the atmospheric air inside by 67 volumes of nitrogen, 7 volumes of carbonic acid, 16 volumes of vapour, and 10 volumes of mixed gases, in the 100 volumes given out, which would cause one part by weight of coal gas to produce nearly three parts by weight of carbonic acid, or otherwise 1 volume of gas of sp. gr. of ·560 to produce 1 volume of carbonic acid of sp. gr. 1·524; or, again, the latter will be found in bulk to be over 7 per cent. of the mass of deteriorated air evolved by the above combustion.

An approximate estimate could easily be ascertained by getting the cubic feet of gas from the gas meters in the hall measured off for the service of the evening, and seeing what ratio the cubic contents of the room bore to the total quantity passed through.* Human existence in the above-complained of state of matters in the Colston Hall might be not inaptly compared to living inside a captive fire-balloon, which was crammed with heated and deoxygenated air, and was at the same time prevented from ascending to relieve itself.

The only air, therefore, that might be considered to have escaped from the ventilators in the gables was the surplus of expansion over the pressure of the atmnophere, and the lighter products of combustion equal to the volumes of gas burnt, which made use of these apertures in much the same way as steam above pressure makes use of the safety-valves of a steam boiler. The air that remained in the hall would, therefore, become denser and heavier by degrees, as the heavy carbonic acid gas replaced the lighter oxygen bulk for bulk, and the former would settle down to the lower levels, while the upper regions of the room would become filled gradually with the lighter nitrogen (sp. gr. ·973) and carbonic oxide (sp. gr. ·972) evolved from the combustion of the gas lights, so that the galleries would be found to have no better air than the sittings on the floor, which is generally experienced. Another effect injurious to the constitution should not be omitted to be stated, and that is the gradual saturation of the air of the room by aqueous vapour, which will be found to be about 16 volumes per 100 volumes of gas products, and 5,087 cubic inches or 3 cubic feet per hour per person.

This evolution of vapour will in the course of time cause the air of the room to become so thoroughly charged with moisture that it can absorb no more, which would cause the perspiration from the skin and the exhalation from the lungs to be checked, and thus tend to embarrass the breathing and the circulation.

W. J. Black.

* In consequence of the law of *diffusion of gases* this 5 per cent. of carb. acid in the volume of the breath, and the 7 per cent. in the gas products, would diffuse themselves in the room, and render vitiated 1,200 volumes more of the air, till the dilution would have reached the lowest stage of respirable air at 1 per cent. of carb. acid, after which it would still be far behind the healthy ratio of ·04 per cent. in volumes of the external atmosphere.

A PLEA FOR THE TREE.

What time the panting world betrays
Responsive warmth beneath the rays
Of summer suns, whose lusty power
It owns throughout the noontide hour,
How pleasant 'tis when care invades,
Or harsh fatigue, to seek the shades
Luxuriously cool, which lie
Beneath the leafy canopy
Of some umbrageous elm or beech;
And there reclining, out of reach
Of galling sunbeams, while the time
Perusing a loved poet's rhyme,
Whose gentle accents can control
The perturbations of the soul,
Revive the mind, and peace impart
Unto the over-anxious heart.

* * * * *

Oh! it doth vex my soul to see
The downfall of a stately tree;
To view fair Nature's noblest charm
Assail'd by man's unsparing arm.
The strokes that rend its roots impart
Keen shocks of sorrow to my heart;
And as its sever'd vitals bleed
With humid sap, I mourn the greed
That oft, alas! compels the blow
Which lays the forest chieftain low.

Emblem of Britain's sturdy will,
Her high endeavours to fulfil;
Symbol of her protective power
When nation-scourging tempests lour,
The mighty oak in grandeur rears
Its head among its few compeers.
Though gnarled with age its furrow'd skin,
An iron heart survives within:
Like some huge giant cased in mail,
It stands defiant of the gale,
And sheltering spreads above its stem
That shieldlike, leafy diadem,
Which crowns it of the champaign wide
The glorious monarch and the pride.

Where yonder knoll confronts the glade,
Erect, like sentinels array'd,
A group of fir-trees lift on high
Their shaggy tops toward the sky;
And as, to brunt the windy shock,
An eagle's talons grasp the rock,
So do the sinewy roots avail
Each parent stem against the gale.
For them opposing whirlwinds lash,
And furious hailstorms rudely dash;
The lightning, too, with fierce attack,
Hath scorch'd them on its fiery rack;
And as the seasons come and go,
The burning sun, the frost, the snow,
In turn recurrent, scourge them oft;
Yet still they bear their heads aloft,
And stretch abroad their ruddy arms,
As if to thwart the angry storms:
Like grisly veterans stanch and bold,

Scarr'd warriors of the days of old.
Offspring of long-forgotten years,
How wierdly grand the cedar rears
Aloft its tall and lordly head,
Whose deep-dyed, sombrous leaflocks spread
With feathery grace, extending wide
In sober, patriarchal pride.
High priest of Nature, calm it stands,
And gently waves its hoary hands,
And softly sighs and murmurs low
Mysterious Runes of long ago;
Or else its whisper'd tributes throng
To bless the soil from which it sprung.

Ah me! how dull his soul must be,
Who loveth not the noble tree!
Who can no charm in Nature see!
Yet through the land the axe descends,
And through the land the woodman lends
His brawny arm to speed the blow
Which lays the leafy legions low.
Lopp'd and dissever'd limb from limb,
Arboreal victims, stark and grim,
Oppress the ground: both ash and oak
Lie flay'd and prostrate 'neath the stroke.
The chestnut with its friendly bower,
The silvery birch, the sycamore,
The poplar that salutes the clouds,
The yew, whose form the tomb enshrouds,
With other stricken brethren fall,
For Desolation marks them all;
And few in wisdom's kindly grace
Uprear the sapling in their place.

Soon will the land from sea to sea,
A dismal, branchless desert be,
With iron fenced,—one monstrous field,
Where steam triumphantly shall wield
Its desperate power; until, mayhap,
It wins for wondering Ceres' lap
A corn-sheaf more—unhallow'd spoil
Of such tree-sacrifice and toil.

Short-sighted ones, regard my moan,
Man doth not live by bread alone.

* * * * *

Alas! that there should need a plea
For Nature's chiefest charm,—the tree.

John Cotton.

BERKSHIRE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.

The annual meeting of this Society took place on the 27th ult. in St. Lawrence's Institute, Reading, Mr. F. W. Albury, the vice-president, in the chair. Several new members having been elected, the hon. secretary (Mr. C. C. Rolfe) read the annual report, which stated that the Society has been steadily increasing in numbers throughout the official year. When the last annual report was drawn up in October, 1874, it comprised forty-eight members, ten lady members, and five associates. At the present time there are seventy-five members (including seven life members), twenty-five lady members, and seven associates. Negotiations have been carried on with Mr. J. H. Blagrave, with a view to obtaining a long lease at an advantageous rent of the old premises adjoining St. Lawrence Churchyard, Reading, commonly called the Abbey Granary, for the purpose of restoring and adapting it for the uses of the Society. The committee regret to say these negotiations could not be carried out, for they were compelled to relinquish the scheme on account of the large sum required to place the premises in repair, and because of the feeble response made to the appeal for aid to carry out the proposed works in the event of the lease being taken up. The committee, however, hope that their meetings may continue to be held in this building. A scheme for establishing an archæological and art library for reference and circulation among the members, is at present under consideration. The committee hope during the ensuing year to organise and establish throughout the county of Berks a staff of local secretaries, to "report to the committee the contemplated injury or destruction of any ancient ecclesiastical, civil, or military work of art."

The report was unanimously adopted, and a long discussion followed upon the desirability of forming an art library in connexion with the Society took place. The following resolutions were adopted:—

(1.) "That an art and historical library in connexion with the Society be at once established."

(2.) "That an estimate be prepared by the hon. secretary, assisted by the committee, of the probable income and expenditure of the Society for the coming year, with a view to ascertaining the amount that could be afforded for the purchase of books, &c., for the library."

The annual dinner of the Society was held in the evening at the Queen's Hotel, Sir John Conroy, bart., in the chair.

Society of British Artists.—At a meeting of the Society of British Artists, last week, it was announced that Sir Francis Grant, president of the Royal Academy, Mr. Frederick Leighton, R.A., and Mr. E. W. Cooke, R.A., had joined the society as honorary members. The following gentlemen have also been elected members of the society:—Messrs. J. Burr, J. Clark, H. Dawson, sen., A. B. Donaldson, E. Ellis, A. F. Grace, A. Goodwin, J. W. B. Knight, J. H. S. Mann, J. Morgan, T. N. Maclean, and G. Sant.

ASSOCIATION OF MUNICIPAL ENGINEERS AND SURVEYORS.

At the seventh meeting of the district committee for the Midlands of the Association of Sanitary Engineers, held in the Town-hall, Cheltenham, on the 21st ult., Mr. E. Pritchard presided. After the routine business, Mr. D. J. Humphris read a paper on the "Sanitary Development of Cheltenham," with statistics; and the company afterwards visited the reservoirs, which were shown to them by Mr. W. M'Landsborough, the engineer to the Waterworks Company. Owing to the very unfavourable weather, it was decided to hear Dr. Wright's paper on the "Geology of Cheltenham and the Cotswolds," in lieu of proceeding to the Sewage Irrigation Farm.

The weather showing signs of improvement, the company proceeded to visit one of the sewer outfalls, where the sewage is allowed to settle in a tank, and the solid matter being afterwards mixed with ashes, is sold to the neighbouring farmers at 2s. per cubic yard.

After the paper in the morning, a short discussion took place in reference to fever hospitals, in which Drs. Wright and Bond took part; after which the company dined together at the Queen's Hotel.

SUBJECTS FOR PAPERS, INSTITUTION OF CIVIL ENGINEERS.

Amongst the subjects for papers, for which, if approved, the council will be prepared to award premiums, are the following:—

On Portable Apparatus for Gauging the Materials, and for the expeditious Mixing of large Quantities, of Portland Cement Concrete.

On the Value and Strength of the different Materials used for making Concrete: with Experiments on the proper Proportions of the various Ingredients, and of the Water, whether salt or fresh, to produce the Strongest Mixture.

On the Application of Steam Machinery for Excavating, and the Cost as compared with Hand Labour.

On Stone-quarrying and Stone-working Machinery.

On the Construction of Warehouses and other Buildings for storing Goods, with the special View of resisting Fire, and on the relative Merits of Brickwork, Iron, and Timber for that object.

On Modern Methods of Constructing the Foundations of Bridges.

On the Design, generally, of Iron Bridges of very large span, for Railway Traffic.

On the Water Supply of Towns, including a description of the sources of supply, of the different modes of storing, collecting, and filtering water, of the various incidental works, of the distribution to the consumers, and of the general practical results.

On the Constant Service of Water Supply, with special reference to its Introduction into the Metropolis, in Substitution for the Intermittent System.

On the various Modes of Dealing with Sewage, either for its disposal or its utilisation.

On the Ventilation and Working of Railway Tunnels of great length.

THE LIVERPOOL TRAMWAYS AND THE CORPORATION.

The Liverpool Tramways Company have been called upon by the Corporation to incur a somewhat serious expenditure by taking up their present lines of rails, and laying down new lines on an entirely new principle, as designed by the borough engineer, and there is at the present time a difference between the company and the municipal authorities on the subject. The borough engineer desires that the new rails should be constructed on a pattern which is objected to by the Tramway Company's engineer as quite unworkable, and incompatible with the rest of the company's system. It appears that the rails proposed by the borough engineer are so formed that instead of the flange of the wheel being on the side it is in the centre, the borough engineer stating that according to this mode of construction the weight would be distributed on both sides of the rail, and more evenly over the wheel than it was when the flange was on the side. At a meeting of the Health Committee of the Council, which has just been held, the subject came under discussion, when some members appeared to be averse to the proposal of the borough engineer. One gentleman asked the engineer whether he could find in this or any other country a rail similar to the one he suggested. The speaker added that they had had experience of the tramways for six years, and he had yet to learn where the engineer got his idea of the new form of rail from. He said it was a serious matter for the company to be compelled to alter their rails and wheels. In answer to the question put to him, the engineer replied that they could not find in any place rails similar to the one he suggested, adding that he did not think they could find anywhere any rails that it would be desirable to lay down in Liverpool. The general feeling of the committee was in favour of the borough engineer's suggestion, and the discussion closed by the chairman stating that the condition of the streets, owing to the present tramways, was disgraceful, and if the company did not take action with regard to the reconstruction of the inner circle the committee must do so, and compel them to take up the rails.

A MODEL TRADESMAN.

In March last I had presented to me two statuettes,—the "Quarrel of the Card-players." My object then was to get a bracket on which to place them in my drawing-room. I was told that So-and-so was the man to go to, and as I had frequently seen his advertisements boasting of his skill and taste, I went to him. I told him I gave him the order with great hesitation, as from experience I had found that no one could do anything for me. He replied,—"Leave the matter to me, and you shall not have to say so in this instance." He took away the figures in order that the design might be correct and harmonious.

At the end of May, not having heard anything from him, I called and said I thought sufficient time had elapsed. "Dear me," replied he, "the matter must have been overlooked." At the end of a fortnight the bracket was sent home, the most prominent ornaments being the heads of three brass nails which supported it. I called again and said this abortion would not do. He sent for it again, and by the middle of June it was returned ornamented with grapes and gold knobs.

Here I would ask, is it because this great country is ruled by drink that grapes must always be used as the principal object of ornamentation? Look in any shop-window in confirmation of my statement. Where is the result of the art-schools? Grapes and grapes, and occasionally acorns. What is the good of teaching if such a simple thing as a bracket could not be produced under three months, and then void of art and taste? In the middle of June I went abroad. On my return in the middle of August I found two copies of the bill, 3*l.* 15*s.*, and half a dozen cards left at so many different times saying the amount would be called for. I questioned my servant very closely, whether he had said I was abroad, and he replied, "Oh! most certainly, and once in particular I remember doing so when the collector called in a brougham." I immediately called and paid the bill, and said that if he displayed the same zeal in executing an order that he did in collecting the money, his customers would be more satisfied, and that I considered the bracket was a disgrace to my room. Of course there was a mistake of the collector; a master can never take any blame to himself. He begged me to let him know when he could come and see the bracket, and it should be set right.

I was not in town again till October, when I wrote asking him to call on one of two mornings. He replied that the notice was too short. I wrote again about ten days ago, saying I would remain in from eleven to one for five days, but I have never seen anything of him.

Now, Mr. Editor, I have no doubt you will say, What has all this long story to do with me or the public? I answer, this:—I want to get up an exhibition of objects the offspring of bad taste,—the productions of men who delude the public by advertisements of their skill and ability. I want to teach the masters: reproaches enough have been showered on workmen, but the chief delinquent is too often lost sight of. Judging from my own experience and that of my friends, we should want a very large building; for the objects, if not interesting, would be very numerous.

I should like to give masters of all sorts a lesson by inviting the public to decline giving orders of any sort that were not absolutely necessary, but I am afraid the "fear of Mrs. Grundy" is so strong that all moral courage is burked. Is the suggestion of any service in establishing a practical school for the enlightenment of master tradesmen?

F. S. A.

HIGH SHAFTS.

Sir,—Will one of your readers kindly answer the following question, viz. — Which is the highest chimney or shaft in England, and what is the height from foundation to top?

C. L.

PROVISION OF TEACHERS.

Sir,—As a schoolmaster I was much interested in your article on training schools as part of a national system of elementary education. Will you allow me to make one slight correction, and to add a few words of comment from a teacher's point of view? Residence in a training college, though very desirable, is not, and never has been, a *sine qud non* for the full certificate. Candidates must be either (1) students in training, or (2) acting teachers who are either ex-pupil teachers, assistants under certificated teachers, or teachers who have received a favourable report from her Majesty's inspector. At the last examination, 1,472 students and 1,326 acting teachers (1,013 of these female) obtained certificates; the proportion of acting teachers in this case is much beyond the average, as many schools hitherto uninspected are now being placed under Government inspection.

The colleges will accommodate about 3,000,—*i.e.*, 1,500 of each year; the number of pupil teachers is about 30,000, none of them being apprenticed for more than five years, so that there may be 6,000 applicants for the 1,500 vacancies. This is, as you say, an injustice to the pupil teachers. It does not end here; for where 1,400 additional teachers per annum would meet the demand, we are increasing at the rate of 2,800. You will meet this by saying,—"But still there is a deficiency of teachers." Granted; but "my Lords" are already beginning to fear that they have overstocked the market. Six years ago we had less than 11,000 apprentices, and now we have 30,000. In this way, though we are not acknowledged as civil servants, supply is regulated (!) by the Council Office,—now a "glut" and then a deficiency,—causing great injury to teachers, and detriment to elementary education.

Unless a "conscience clause" is introduced into denominational training colleges, I do not see how school-boards are to find training for their pupil teachers, except in the way you suggest,—provide it themselves, which at present they have no power to do.

A. K. C.

GLASGOW WORKING MEN'S INVESTMENT AND BUILDING SOCIETY (LIMITED).

The quarterly meeting of the above Society was held last week in the City Hall Saloon, Mr. Allan S. Edmiston, the president, in the chair. The report showed that since May last 432 new shares had been added to the register, making a total of 2,147 shares, representing a subscribed capital of 53,675*l.* Ground had been secured at Clyde Bank and Springfield for the purposes of the Society. The chairman remarked that by May next the Society will have finished property to the value of 30,000*l.* He further alluded to the difficulty the committee had experienced in obtaining suitable ground in the city at such a price as would warrant them in feuing or leasing it. The committee had ground in view suitable for Dr. Begg's model houses with good access to the city, and also ground suitable for cottages within a few minutes' ride of the city per rail. The manager had for some time been turning his attention to concrete, and had no difficulty in recommending the use of that material, which would cost considerably less than stone.

FLEXIBLE MANDRIL FOR BENDING METAL PIPES.

This has been recently introduced in America. The mandril consists of a coiled or spiral spring, made of square steel wire, and of such size as to be inserted freely into the pipe to be bent. Pressure may then be applied in any convenient way, but preferably it should be done with a block of wood shaped to the curve to which it is desired to bend the pipe, its edge being grooved to fit the outside of the pipe.

After the bend is made the mandril is withdrawn by turning it from one end in the direction in which it is wound, which slightly reduces its diameter, and it is screwed out very easily. The old method of bending copper or brass pipes by first filling them with rosin, lead, or sand, is tedious and uncertain, requiring much skill, especially for large pipes, and the crimping of the inner side and stretching of the outer sides were very unequal. By this method the pipe was always considerably flattened and required hammering and filing into shape. All these objections

are obviated by the use of the new instrument, as it leaves the pipe so near perfectly round that the eye does not detect the variation. The surface is smooth, so that there is no loss of metal (and consequently of strength) by filing into shape. Moreover, much time is saved.

SOMETHING LIKE A HOUSE.

A Scottish paper lately contained an advertisement stating that a certain country residence, near Newcastle-upon-Tyne, was for sale. The advertisement is unique in its way, as may be seen from the following extract:—

"The Villa of Lucullus at Tusculum could not have surpassed the residential fascinations of ——. Built for all time upon a site which sanatorial science would pronounce faultless, and commanding from its turrets a landscape of picturesque diversity,—the Vale of Ravensworth, Dunston Hill, the romantic features of the Derwent, with glimpses of that main artery of the wealth of the muscular metropolis of the North—Coaly Tyne.

Internally complete in its several departments, from the lofty, spacious, and elegant saloons, through the unbroken vista of corridors,—the 'perfumed chambers under canopies of costly state,'—to the menial offices, models of domestic economy. The exterior appurtenances ample and in unison with a gentleman's establishment; gardens luxuriant in horticultural productions, refreshed by a spring of delicious water,—the *Pierian* spring,—

> 'Here quench your thirst, and mark me
> An emblem of true charity;
> Who, while my bounty to bestow,
> Am neither seen nor heard to flow';—

Flora supreme in her ornate beds and redolent conservatories; parks and pleasure-grounds serene in seclusion; ancestral trees, with their rookery imparting an air of antiquated dignity; the fish-pond ministering to aquatic proclivities."

It would certainly be worth a pilgrimage to the "Coaly Tyne" in order to see a modern mansion, "*built for all time*, upon a site which sanatorial science would pronounce faultless," especially if such very prosaic appliances as water-closets, sinks, and drains (as to which the advertisement is silent), entirely accord with the site as to sanitary excellence.

DRAINAGE OF MAIDSTONE.

Sir,—Under the above heading, in last week's *Builder*, it was stated that Mr. Buckham, late borough surveyor of Maidstone, had written, "claiming the invention of the drainage plans accepted from Mr. Angell, and asking for some compensation."

To prevent misunderstanding, will you allow me to state that I was called in by the corporation to report upon four different sets of plans submitted at various times, Mr. Buckham's among the number? I made my report, and gave Mr. Buckham due credit.

Afterwards, in accordance with instructions, I prepared an entirely new scheme, in which Mr. Buckham's views had no part, the only point in common being the outfall below Allington Locks, a point which, without any engineering knowledge, is obvious to every one as the only available gravitation outfall. Therefore, in adopting an outfall which was patent to any one, there was no "invention" on the part of Mr. Buckham, nor any piracy on my part. I should, however, be pleased to learn that Mr. Buckham has obtained "compensation" for any anxious hours he may have spent over the subject of the drainage of Maidstone.

Lewis Angell.

CHURCH BUILDING NEWS.

Cradley.—The parish church of Cradley was formally re-opened on the 13th ult., after having been closed a year for additions and improvements. A massive campanile has been built to carry a peal of bells presented to the church by the late Mrs. Wood-Aston. The tower is of dark red brick and Grinshill stone, and from the ground line to the top of the weathercock rises to a height of 106 ft. A new roof has been put to the nave, and a new east window. The church has been entirely re-seated at the expense of Messrs. Noah Hingley & Son. The cost amounts to nearly 4,000*l.*, and the works have been carried out by Mr. Nelson and Mr. I. P. Bloomer, from the designs of Mr. John Cotton, architect.

Aberdeen.—A special meeting of the Aberdeen Town Council was held on the 12th ult., to decide as to a design for the steeple to be erected on St. Nicholas Church. Two designs and corresponding models prepared by Mr. Smith, city architect, were exhibited in the Joint Hall of the County Buildings. At the meeting the Lord Provost moved that the design "No. 3 B" be adopted, and that it be remitted to the Churches Committee to get the necessary working plans and tenders for the work, it being understood that the architect, while adhering to the general design selected, shall be at liberty, in preparing the working plans, to make, with the concurrence of the commitee, any minor alterations which may appear to him to be improvements. The resolution was unanimously adopted.

Southampton.—It has been resolved to add a chancel to Pear Tree Green Church, near Southampton, to remove the south gallery, and to effect other alterations and additions. Mr. St. Aubyn is the architect engaged to prepare the plans.

Pipe and Lyde.—On the 8th ult. the parish church of Pipe and Lyde was reopened, after restoration, at a cost of about 1,500*l.* The nave and tower walls have been entirely rebuilt, and a south porch is in course of construction. The nave has also been refitted with spacious open seats of pitch-pine, and an oak pulpit and lectern have been given by Mr. Turner, treasurer of Guy's Hospital. Both have been carved by Mr. Robert Clarke. The floor throughout has been paved with Godwin's encaustic tiles. The nave is lighted on the north by six, and on the south by five, lancet windows. Those in the nave and tower have been glazed with cathedral-tinted glass, with borders of clear glass; but the centre light of the east window is filled with stained glass. There is a carved stone reredos with carved figures on the pinnacles, the gift of Mrs. Edward George. The length of the nave is 46 ft. by 22 ft. wide. About 180 persons can be comfortably accommodated in the building. The stone is a hard, coloured conglomerate. The greater portion of the stonework has been dressed and placed under the direction of Mr. W. Lewis, builder, of this city; the carpentry being by Mr. Clayton, and the glazing, staining, and colouring by Mr. W. Barber, of Hereford. The roof of the church is of massive oak, and it is covered with stone tiles. The architect has been Mr. F. R. Kempson.

Benniworth.—The church of St. Julian, Benniworth, was re-opened on the 5th ult., after restoration by Messrs. Walter & Hensman, of Horncastle, under the direction of Mr. James Fowler, architect, Louth. From traces discovered in the course of the restoration, the church appears to have been cruciform, the nave and chancel having been of uniform width and height throughout, and intersected by the transepts without any arches. The tower contains a Norman doorway with rich moulding. The chancel has been entirely rebuilt, and the south transept re-opened. The north and south transepts are separated by an arcade of two arches from the nave. The pulpit is of oak, carved, as are also the altar-rails and lectern.

Bere Regis.—The ancient parish church of Bere Regis, Dorsetshire, was re-opened on the 7th ult., after restoration under the direction of Mr. G. E. Street, R.A., at a cost of nearly 4,000*l.*, Messrs. Hale, of Salisbury, being the contractors. About forty years ago the floor of the nave, which was originally nearly 2 ft. below the level of the north aisle, was raised, by which the old Norman piers were dwarfed and the proportions of the whole church destroyed. These and other innovations it has been the object of the present restoration to remove. The endeavour has been to restore the original features of the building in their integrity. The windows in the south aisle are an exact copy of the tracery of former windows, the *débris* of which were found built up in the walls, where they have lain hidden for three centuries. Many of the old stones have been re-used. In the south aisle a portion of the ancient tiling was discovered undisturbed. The patterns have been copied, and the character of the ancient design will be as far as possible reproduced. Even the mouldings of the principals of the chancel roof are copied from an old fragment discovered in the wall. The roofs (with the exception of the carefully-restored nave roof) are new; the wall of the south arcade has been rebuilt, and the arches and pillars pushed by levers into a straight position; the north wall has been rebuilt from the foundations; the bells have been re-hung, and one that was broken has been re-cast, &c. Upon removing the whitewash it appeared that the entire walls of the church were highly coloured in ancient times. Mr. Redden was clerk of the works, and Messrs. Abley & Ham were foremen to the contractors. The carving was done by Mr. Harry Hems.

Brighton.—The new Church of St. James, Brighton, was consecrated on the 5th ult. It occupies the site of the old chapel formerly ministered in by the Rev. John Purchas. The new church is built in the Early English style, and consists of a nave, two aisles, and short chancel. Its total length, north to south, is 89 ft., outside measurement, and total width, east to west, 66 ft., outside measurement; while the width of the nave is 24 ft.; height to springing of roof, 39 ft.; the roof rising above this about 23 ft. The width of the aisles internally is,—west, 17 ft. 10 in., and east 14 ft. The church is heated by Moule's hot-air apparatus. The main entrance to the church is from St. James's-street, but there is also an entrance in Chapel-street, and one for the clergy and choir in High-street. The materials of construction are, for outside walls, flint work, with kiln brick piers, lacing courses, eaves, and label moulds, and with Bath-stone window and door dressings, and Bath-stone mullions, &c. Messrs. Scott & Hyde are the architects, and the builders were Messrs. Patching & Webber. The cost was upwards of 4,000*l.*——On the 18th ult. the foundation-stone of St. Luke's School-Church, Albion-hill, Brighton, was laid, in the presence of a large number of persons. The builder's contract price is 1,885*l.* Mr. William White, of London, is the architect, and Messrs. Nash & Co., of Hove, are the contractors.

North Newbald.—The parish church of North Newbald, Yorkshire, was opened on the 8th ult., after being closed since the 11th of April last. Some ten years ago the chancel underwent a thorough renovation, at the cost of the late Mr. John Clough, lord of the manor. After an interval of a few years the extension of the repairs of the west nave was suggested by the late Canon Harcourt, and this has now been completed. The church is of Norman architecture. Over one of the principal doors is a statue of St. Nicholas, to whom the building is dedicated. The contractor for the alterations was Mr. Thomas Grant, builder, of Pocklington.

Malpas (Cheshire).—It is proposed to restore Malpas parish church, and to construct an organ chamber on the north side of the chancel, from plans by Mr. Sherlock, the diocesan architect.

Clerkenwell.—The new Church of St. Paul, Central-street, Goswell-road, will be consecrated by the Bishop of London to-day (Saturday). The building is intended to seat 550 persons, and has been erected from a design by Mr. Ewan Christian, architect. The principal material used externally is Kentish rag. The contract for the foundation was executed by Messrs. Brass, Old-street, and the remaining contract was, after competition, given to a builder in the south of London. The pulpit, font, communion-table, chairs, bells, Royal arms, and vestry clock have been removed from the lately-demolished church of St. Mildred, Poultry, opposite the Mansion House. The total cost, exclusive of site, will be about 9,500*l.*

Burton, near Christchurch (Hants).—This new church, dedicated to St. Luke, has recently been completed in so far as the work is intended at present. The nave, south porch, south transept, and a portion of the chancel and south chancel aisle have been finished, the east end being terminated by a temporary wall. Eventually the chancel and its aisle will be considerably elongated, and provision has been made for opening out an arch into a north transept when required. The cross plan was adopted in deference to the wishes of one of those most interested in the church. The walls are built of red bricks, banded with stone, of Bath Box-ground. The contract was for 2,537*l.*, but this sum will be somewhat exceeded. Mr. Joseph Landen, of Burton, was the builder; the architects were Messrs. Benjamin & Edmund B. Ferrey. The width of the nave is 24 ft. 6 in., and its length 71 ft. 9 in.

Newnham.—Newnham Church, Gloucestershire, was re-opened on the 4th ult., after restoration and enlargement under the direction of Messrs. Waller & Sons, architects, Gloucester. The whole of the interior fittings,—pews, staircases, and galleries,—have been removed, and the church has been fitted with new seats on wooden floors, tiles being laid in the passages, the whole surface of the church having been covered with a bed of concrete, 6 in. thick. The modern windows have been taken out and new ones substituted. The chancel has been entirely rebuilt and re-roofed, the old windows being again used, and the floors have been laid with encaustic tiles. The old vestry has been taken down, and a new one erected in its place. All the defective stonework of the walls, doorways, plinths, weather-courses, &c., has been reinstated. The nave roof has been stripped and the timbers strengthened where necessary, and it has been re-covered with red Broseley tiles. A new aisle, of larger dimensions than the nave and extending westward as far as the tower wall in that direction, has been erected, and an arcade of four arches carried on polished granite shafts now occupies the place of the former south wall of the nave. An organ-chamber has been erected on the north side adjoining the choir-seats, which have been so

arranged as to occupy the first bay of the nave, the chancel being too small to be used for this purpose.

Upton-on-Severn.—Increased church accommodation at Upton-on-Severn is very much needed, and Mr. Blomfield has lately been commissioned to examine the fabric of the parish church, with a view to its adaptation and enlargement. Proposals have been made and donations promised for the erection of an entirely new church, leaving the present parish church intact.

THE LATE CLERK OF WORKS AT CHESTER CATHEDRAL.

SIR,—I saw with regret a paragraph in last week's *Builder*, announcing the death of Mr. Frater, who had been clerk of works at Chester cathedral since the commencement of the restoration. Having been at one time constantly in the neighbourhood, I frequently visited the cathedral, and should like to give a word of testimony to the accurate knowledge of his work, and enthusiastic interest in it, which Mr. Frater always exhibited. I spent an hour or two on several occasions with him, going over the building, and was struck with his knowledge of every part of it, and his thorough appreciation of the problems which he had to assist in working out. If Sir Gilbert Scott has been as well served on all his restoration works, he has been fortunate in his selection of assistants. Mr. Frater was, I believe, much esteemed and respected by those connected with the cathedral for his general high character and good sense, as well as for the ability he showed in carrying out the task intrusted to him. ARCHITECT.

A SUGGESTION FOR A NATIONAL COLLECTION OF PLANS OF UNRESTORED BUILDINGS.

SIR,—In his opening address at the Institute on Monday night, Sir Gilbert Scott dwelt upon the importance of placing on record the present state of our ancient buildings, which are becoming more and more dilapidated each succeeding year; and then, going on to the subject of church restoration, he deplored the loss of the evidences of their antiquity, which, however careful the restoration may have been, so many churches have suffered.

We must all feel this to be most true, and we can easily imagine that the archæologist of the twenty-first century will be somewhat puzzled to distinguish, in some of our cathedrals and churches, between the original work and its nineteenth-century repairs and additions executed, some with and some without sufficient authority (doubtless in many cases there will, alas! be no such difficulty). Up to the commencement of the Mediæval revival it will be easy enough, but after that there will be much confusion in making the distinction, simply because the work of that date is often so *good* an imitation of the old work. There will then be hardly any available and really reliable evidence of the exact state of buildings before the nineteenth-century restoration, for photographs by that time may have altogether faded away. Surely, then, it would be desirable for an arrangement to be made for the architects concerned in the several restorations to take careful drawings, stone for stone, of the buildings under their charge before setting to work, and to deposit these in some place which should be the recognised depository for the architectural records of all buildings, great or small. The archæologist of the future, such a one as the late Professor Willis, could then, by reference to the old nineteenth-century plans, trace out and distinguish the dates of each feature and each stone.

For an instance, to take the grand north front of the transept of Westminster Abbey, which is now to be restored and refaced (and that we may be sure in the most careful and conservative spirit), how very interesting it will be in the future to be able to refer to detailed plans, showing exactly the state in which we now see it. What a satisfaction it is to us now to refer to Dugdale's "Monasticon," and to see Lincoln Cathedral, with its three spires, the nave of St. Saviour's, Southwark, and the west front of Westminster Abbey before Wren's additions; and we ought to give the same satisfaction to posterity.

If such a depository could be established, I think there can be no doubt that all of us would gladly come forward and contribute each our share towards filling it with the plans and notes, before restoration, of those buildings which have been under our charge, much of which valuable information we must all admit is now scattered and destroyed in office waste-paper baskets, and in periodical clearing-out bonfires! The labour, divided amongst so many, would be but slight to each, and to this collection should be added the many carefully-measured drawings made for students' and other prizes.

This collection, or museum, should be considered national, and should be under the charge of the Royal Institute of British Architects. It should be in some specially-arranged building, and it would then be officially recognised as the depository of information of all kinds relating to the fabrics of our ancient buildings.

In the hope that something may be done towards this, I venture to throw out these few suggestions. R. HERBERT CARPENTER.

COMPLIMENTS AT THE INSTITUTE.

SIR,—I know nothing about architecture; so when I was decoyed by a professional friend into accompanying him to the opening meeting of the Institute, the other night, I was more taken up with noticing the general nature of the proceedings than desiring special architectural lessons, and I was certainly most struck with the affection that architects have for each other. "How sweet and joyful a thing it is for brethren to dwell together in unity," was the reflection that came uppermost when I had heard all the compliments which gushed forth, first set in motion by the presentation of a portrait of an ex-president of the Society. Only, is it not possible, in meetings which are practically public, to over-do this a little? And is there not a point where mutual compliment, fitting enough on certain occasions and within certain limits, degenerates into something not quite consistent with what is manly, sensible, and sincere? At any rate, I would suggest to the architects, next time an occasion occurs for complimenting each other, to "draw it mild,"—at least, if they will not despise a hint from

AN OUTSIDER.

MANAGEMENT OF THE INSTITUTE.

MR. W. H. WHITE, at the opening meeting of the Institute on Monday night, called attention to several gross blunders which had been allowed to appear in the list of members just issued. The secretary, Mr. Eastlake, explained—and apparently to the satisfaction of the president and a few others—that he and Mr. Cockerell had carefully revised the list, but that it had been mislaid by the printers. Now, Sir, as a rule (and no one knows it better than the secretary), accidents of this kind are generally prevented by the fact that corrected proofs are always expected to be sent back. I should be glad, in common with many others, to know, first, who gave the order to print off the list of members; secondly, why such order was given without the secretary seeing the last corrected proof; and thirdly, at whose expense the revised lists are to be printed. ARCHITECT.

ST. PANCRAS.

SIR,—A statement appears in the *Builder*, of the 30th of October, that the settlement of the St. Pancras account is delayed because the contractors made a mistake in their tender of 200*l.*, which we most emphatically contradict; our claim for 200*l.*, which is demurred to, being for extra works beyond the amount of tender, and not for any mistake therein.

AITCHISON & WALKER, Contractors.

THE SHEFFIELD SCHOOL BOARD AND ITS ARCHITECT.

SIR,—All the architectural world and its pupils (these latter are legion) outside the "City of Soot" were startled recently by an account that went forth concerning a somewhat unique competition of architects in Sheffield for a job. It was not the elevations, but the *figure*, that was to decide the fate of the combatants, and every one sent in even as he listed, not drawings, but quotations. Many of us remember that Messrs. Innocent & Brown (the School Board architects) stuck honourably to the traditions of the Institute, and handed in the ordinary schedule of 5 per cent.; we remember, too, that they, and they only, did this. Well-known architects offered to work at 3½, 2½, and 2 per cent., and gradually the scale decreased, until, lastly, one enterprising aspirant for architectural honours offered to "*do*" the job at a rate of pay equivalent to a fraction less than ¼ per cent. We, who work at the banker and at the bench, looked on and wondered, exclaiming amongst ourselves, with surprised tones, in the words of Sankey and Moody, "What will the end be?"

In the paragraph in your "Miscellanea" last week, under the same heading as this letter, a sequel to the professional competition is quoted. Every one who knows Sheffield knows but too well how utterly barren the place has ever been in an architectural point of view. Beautifully situated in the valley of the Don, Dame Nature has done her part well with its surroundings, but the busy enterprise of its princely merchants has been very little devoted to making presentable those places where men most do congregate in the battle of life. If we look at the churches, save only and of course "t'ow'd church" of early days, those which have sprung up in Sheffield, as everywhere, within recent times, are, on the whole, disappointing. The best undoubtedly is the Roman Catholic one of St. Marie, in Norfolk-row, a finely-conceived building in the Decorated style, built some twenty or thirty years ago, from the design, if I mistake not, of the dissolved firm of Messrs. Weightman, Hatfield, & Goldie. Next comes St. Mark's, in Glossop-road, by Mr. Crossland, a church in the same style; and, save only that it possesses a not altogether happy spire, is otherwise a fairly good church. An erection known locally as "John Brown's Church," is, when it can be seen, and this is seldom, for it generally stands "under a cloud," anything but a fortunate illustration of a modern church; and the churches in Hanover-street and at Cherry-tree received at the time of their erection such severe strictures from at least one architectural paper, that it is unnecessary for me to refer more particularly to them. Of public buildings, Sheffield may almost be said to possess none. A few banks, of stereotyped classical design, are to be found here and there by those who care to look for them, and waterworks offices of similar conception also exist. The new post-office, of "Williamsorum" style, might possibly lay a claim to dignity were it carried up a story higher; and next to it the new offices of the Gas Company are really an imposing and well-considered pile. In Barker Pool is the new Albert Hall, a box-like building, which, after recently costing its proprietors almost as much as an ironclad, is so utterly ugly and unsightly from every point of view, that when the Prince of Wales's visit was recently anticipated, it was seriously proposed in the Town Council to *cover it up with flags!*

Almost the only redeeming point, then, that Sheffield has about it, in an architectural sense, are its noble series of School-Board schools, fourteen of which have been built in as many different parts of the town, during the last five years, by Messrs. Innocent & Brown. The success which has attended those architects in their work has been universally acknowledged; and whether we look upon the series as regards design, individuality of treatment, interior arrangement, or moderate cost combined with elegance and all modern requirements, it must in candour be acknowledged that what they have accomplished has been thoroughly well done in every respect.

And yet, in acquiescing with all this, the Sheffield School Board has just come to the conclusion that it will be better to throw open the remaining two schools to competition. Fourteen schools are built, and found in every respect the sort of thing required. They are all, save one, already opened and work well: they are, too, as it were, the only things of beauty that exist,—oases, indeed,—amidst the masses of dreary-looking houses and smuttier manufactories by which they are, without exception, surrounded. Should this mooted idea of the Board's be carried out we can scarcely hope that the remaining two schools will, in an architectural sense, be part and parcel of the grand work which Sheffield has, acting under the advice of its School Board, so nearly carried out with such noble and capital results.

In choosing for their architects young and before then almost inexperienced men, like Messrs. Innocent & Brown, the School Board showed a wisdom for which they have been singularly and most thoroughly rewarded. "Much will have more," we know, but "Let well alone" is a better proverb; and if the School Board of Sheffield take the step they now meditate, and by that step other local architects are introduced upon the scene, they will not only place themselves open to the charge of acting shabbily to faithful and talented servants, after having more than their highest anticipations realised; but they cannot in reason hope to be better served by any other resident members of the profession in Sheffield.

AN OLD SHEFFIELDER.

VARIORUM.

Fraser's Magazine for November includes, under the title, "A Ride through Bosnia" (with a map), an interesting account of a tour recently accomplished by the writer and two professional friends through a district of European Turkey very little if at all known. It included nineteen days on horseback, and was made under instructions from the Government of the Sublime Porte, to whom the formal and technical report has been sent. The writer is understood to be Mr. Henry Vignoles, C.E.——The current *Quarterly* has a powerful article on "Drink: the Vice and the Disease," in which the need of legal control over habitual drunkards is forcibly urged.——We take a paragraph from "Old and New London" for November on the death-place of Chaucer and Jonson:—"In the year 1300, Geoffrey Chaucer, 'the first illuminer of the English language,' entered into an agreement for the lease of a house adjoining the 'White Rose' Tavern, which abutted on the old Lady Chapel of the Abbey. Chaucer held the office of Clerk of the King's Works, and was robbed (more than once) by Richard Brerelay and others, probably as he was going to or returning from Eltham. Brerelay, though he escaped punishment on this occasion, was afterwards tried for another highway robbery, pleaded 'Not guilty,' and 'declared that he was ready to defend himself by his body against the approver (Clerk), as Mr. W. Selby tells us in the introduction to his 'Life Records of Chaucer,' thus demanding, 'the wager of battle.' A duel was accordingly fought between Brerelay and Clerk (the said 'approver') at Tothill on the 21st of April, 1391, the result being that the 'approver' was vanquished, and forthwith received judgment to be hanged. It is probable that it was in his house at Westminster that Chaucer ended his days. . . . . His house, the tavern, and St. Mary's Chapel were demolished in 1502, to give

place to the gorgeous mausoleum of Henry VII. In a house which stood between the churchyard and the Old Palace, lived in his later years 'rare Ben Jonson,' and here he died; so that two of the greatest of England's poets breathed their last almost upon the same spot."——Two interesting stories, "The Manchester Man" and "Pretty Miss Bellew," are concluded in the November part of *Cassell's Family Magazine*, which is altogether a good number.——The *Quiver* gives the first part of a new story, "The Pennant Family."——Mr. Herbert Fry's little book of large charities ("The Royal Guide to London Charities") has appeared as usual for the coming year. It shows in alphabetical order the name of each institution, date of foundation, objects, chief officials, and so on.

Miscellanea.

Improvements at Douglas, Isle of Man.—At a meeting of the Douglas Improvement Board, held on the 19th ult., it was stated that the great shore improvement and land reclamation scheme, designed by and carried out under the superintendence of Mr. C. O. Ellison, of Liverpool, architect, was on the eve of completion. Mr. Powell, the engineer to the Board, said that the sea-wall had been completed to its full length, 2,477 ft., and was finished with the exception of the final block. Five retaining walls, which altogether measured 2,900 lineal feet, were also completed. With respect to the rubble embankment, he reported that this was not quite finished, but there only remained about one-sixteenth of the whole to be completed. The recent gales have severely tested the work, and although a considerable portion of it was only newly finished, it remains perfectly safe and uninjured. The total expenditure upon the work to the present time has been 18,049*l.* 8s. 10d. The board expressed great gratification at this result, as the work had been estimated to cost 22,000*l.*

Can this be True?—The London correspondent of the *Liverpool Journal* says:—"Passengers to and from London may have noticed lately a great change in the little town of Watford. Formerly studded with villas, and having a suburban sort of appearance, it has become overrun with small court property. One might suppose that some great immigration of workmen had taken place here. Nothing of the kind is the case, however. The real reason is as follows:—A certain well-known nobleman—not the Earl of Clarendon, whose very attractive mansion and park are near Watford—has large estates in the neighbourhood. Now, this 'noble scion of an ancient race' witnessed with increasing disgust the gradual growth of the 'snowy villas' around his domains. . . . . He hastily erected all over his property rows upon rows of workmen's dwellings, whose inhabitants he knew would be as odious to the 'wealthy upstarts' as they themselves were to his lordship. And as the result the villas are now closed, and 'desolation reigns where once was mirth.'"

Curious Names.—"C. B.," in *Notes and Queries*, has the following paragraph, which will not be without interest to some of our readers:—"Although not a student of nomenclature, I have been struck by some names of families in the neighbourhood of Swanage, in the island of Purbeck, and thinking that they are unusual, and that some of your readers may be interested, I venture to communicate them:—Chinchen, Dessallioud, Docwra, Horlock (pronounced Harleck), Melmoth, Mowlem. In a little book on Swanage and its neighbourhood, by the Rev. E. D. Burrowes, vicar of Kimmeridge, it is stated that Durandus, the king's carpenter, and architect of the great or king's tower at Corfe Castle, had bestowed upon him, by William the Conqueror, the manor of Moleham in Swanwic, and that his descendants are, without doubt, represented by the family now called Mowlem." We need scarcely say that Docwra and Mowlem are well-known names in the contracting world.

St. James's Park.—Complaints have been made in our pages, and, doubtless, elsewhere, as to the state of the pathways in St. James's Park. We are glad to say that workmen have commenced laying down a very broad walk of asphalte pavement from Buckingham Gate to St. James's Palace and Clarence and Marlborough Houses.

Is a Tombstone an Article of Manufacture?—On the 27th ult., at the Sheffield Town-hall, before Messrs. H. Harrison and T. A. Sorby, the Sheffield General Cemetery Company were summoned by Messrs. E. & T. Smith, of the Marble Works, Cemetery-road, Sheffield, for pirating a registered design of a tombstone. A preliminary objection raised was that the case did not come within the 5th & 6th Vict., c. 100, inasmuch as the tombstone was not an article of manufacture composed wholly or chiefly of earthenware, and that the design has been registered as a whole, nothing being said of the ornamental portions of it. In reply, it was argued that the summons might be amended so as to include the subsequent Act under which it ought to have been taken out; and that even if the design had been merely registered as a whole the prosecutors had the sole right of applying its ornamental details to other tombstones. The summons was ultimately rejected on the technical point raised, the merits of the case not being gone into.

New Mansion at Glack, N.B.—A new mansion for Mr. Mackenzie has just been completed at Glack, in the parish of Dairot, commanding a view of a great portion of the fertile valley of the Garioch. It has been designed by Mr. Matthews, architect, Aberdeen, and is in the Old Scottish Baronial style. The walling is wholly of block granite, a great portion of the work being faced with dressed stones from Kemnay. The central feature consists of a tower rising to a height of 80 ft. The erection of the mansion was entrusted to local tradesmen. Mr. Mackenzie, Inverurie, did the mason work; Messrs. Warrack & Daniel, Aberdeen, the carpenter work; Mr. Mitchell, Inverurie, the slater work; and Messrs. Farquhar & Gill, Aberdeen, the painter work. The cost was 10,000*l.*

The North Bridge, Edinburgh.—The works connected with the widening of the North Bridge, Edinburgh, have been completed, and the bridge was re-opened for traffic on the 20th ult. The level of the bridge has been raised, on an average, about 18 in., and this was accomplished by putting down a layer of concrete, upon which the new 3-in. paving-blocks have been set. The channels are of dressed granite, and are laid about 3 in. below the kerb of the foot pavement on each side. In accordance with the recent Act of Parliament, a double line of tramway-rails has been laid on the bridge proper. The crossings are placed at the south end of the bridge and at the Tron Church. Mr. Mellon had the contract for the re-causeways of the street and bridge, the cost being 1,525*l.*

Archæological Discoveries.—It is stated that workmen, whilst digging for the foundation of a building at Kertch, on the Straits of Yenikale, encountered a crypt or tomb-vault, containing a number of valuables of gold and gems. The following items were brought to light:—A golden helm in *à-jour* and *relievo*, which is quite a jewel of Greek goldsmith's work of the best period. The total weight of the gold articles is 3½ lb., and the whole will be sent to the Ermitage Museum at St. Petersburg. In addition to the above a Greek vase had been dug out at Kertch some time previously, belonging to the second century B.C., which gives, if report be true, a long wished-for representation of the missing western frieze of the Parthenon at Athens.

Enlargement of Durham County Gaol.—Captain Powell, the Government inspector of prisons, lately inspected (before occupation by prisoners) the additions recently made to the south and east wings, providing accommodation for 167 prisoners (in separate cells), spacious worksheds, baths, lavatories, &c. He was well satisfied with all the arrangements. The work has been designed and carried out under the superintendence of Mr. Crozier, the county engineer and architect, and his clerk of works, C. Turnbull. The contractors were Messrs. Johnson & Fletcher, West Hartlepool, with the sub-contractors,—Mr. Laidler, plumber, Durham; Mr. Seal, West Hartlepool, smith; and Messrs. Shepherd & Sons, Durham, slaters.

New Mission Room at Northampton.—A new mission-room, in connexion with St. Katherine's Church, Northampton, has just been erected in Scarletwell-street. Accommodation is provided for 150 persons, at a cost of 600*l.* The front of the building is of Duston stone, with sandstone dressings. Mr. Ingman was the architect, and Mr. Branson the builder.

New Street-Sweeper and Lifter.—On the 21st ult. trial was made in the Ward-road, Dundee, of a new street-sweeper and lifter. The lifter is simply composed of a box, open in front, and 3 ft. square, into which the mud is swept by a brush, and the box is emptied at intervals as it becomes filled. One difficulty experienced before was that the machines swept from the middle of the street towards the water channel, and the mud had then to be swept into heaps by scavengers, and in wet weather it frequently happened that much of the mud was carried into the sewers. Now, however, the sweeping machines have been made to sweep from the water channel, and the mud is thus brushed into the middle of the street, where it is lifted and formed in heaps by the lifter. The plan of the lifter has been conceived by Bailie Brownlee.

Mellison's Skating Rink, Brighton.—This rink, after being closed for some time, is about to be re-opened. On entering the hall a material and important change will be noticed. Instead of the rough boards—particularly uncomfortable when crossing the room—there is now an asphalte surface, as smooth as skaters can bear it, laid after the most approved style, with the latest improvements embodied in it, and by the best workmen which Claridge's Patent Asphalte Company can send out. This change is a good one, and there are several others. There are the roof and wall decorations, which are handsome and tasteful. The prevailing colour of the walls is French grey, panelled in pale green, with scroll-work in dark violet and vermilion.

Unhealthy Dwellings in St. Martin's-in-the-Fields.—Mr. John J. Skegg, the medical officer to the Vestry of St. Martin's-in-the-Fields, has reported to that body the result of his inspection of the houses and courts which in his opinion should, under the provisions of the Artisans' Dwellings Act, be demolished. He commences with Bedfordbury and the courts contiguous. In 1871 the population numbered 2,163. Bedfordbury is a long narrow street of forty-seven houses, with courts leading out of it on either side. Some of these courts are "blind" (*culs de sac*), and very narrow, thus rendering light and air difficult of access. These forty-seven houses are, with very few exceptions, so old and dilapidated that it is quite impossible to make them fit habitations.

Recently deceased Scottish Antiquaries.—The Scottish papers announce the death, on the 19th ult., of Mr. George Petrie, of Kirkwall. Mr. Petrie was a fellow of the Royal Society of Antiquaries, Copenhagen; honorary member and local secretary of the Archæological Institute of Great Britain and Ireland; corresponding member of the Society of Antiquaries of Scotland, and corresponding member of the Anthropological Society of London. His contributions to the *Orcadian* on the antiquities of the county in days gone by were varied and extensive. On the 22nd ult. died Mr. D. Black, F.A.S., Brechin, aged 80. For about forty years he was town clerk of Brechin, and was the author of a "History of Brechin."

Geological Maps at the Jermyn-street Museum.—During the recess, several useful additions have been made to the Museum of Practical Geology in Jermyn-street. Among the most important are the geological maps hung on spring-rollers around the hall. They are copies of the published maps of her Majesty's Geological Survey, and they show the progress of the work done by this branch of the civil service. The number of people who take an interest in knowing the results attained by geologists increases every year, but up till now there has been no public place except the British Museum where the maps produced by the Survey could be inspected.

Tyler's-green, Penn, Bucks.—On Thursday, the 14th ult., the foundation-stone of new schools and residence here was laid by Sir Philip Rose, bart., whose seat is at Rayners, close by. The buildings are for the School Board of Chepping Wycombe Parish, and will accommodate, when finished, about 250 children. The style is Early English; the materials are red brick and axed flintwork, with a few quaint touches in roofing and walls, illustrative of some interesting old local features. The contract has been taken by Mr. Woodbridge, builder, Maidenhead, at 1,850*l.*, and the drawings have been prepared by Mr. Arthur Vernon, architect, High Wycombe.

Trees for Portland-place.—At a meeting of the Marylebone Vestry on the 28th ult., it was unanimously resolved, on the motion of Mr. Harlowe,—"That it be referred to a special committee to consider and report as to the practicability and advisability of planting a row of suitable trees throughout its entire length on each side of Portland-place." Mr. Harlowe, in moving his resolution, referred to the pleasant aspect which the planting of trees gave to the Boulevards of Paris, Brussels, and other Continental cities, and to the adaptability of Portland-place (almost the only thoroughfare in the metropolis that is so) to similar treatment.

Proposed Public Baths for Gloucester.—At a meeting of the Gloucester Town Council, on the 27th ult., it was stated that the winners of the second premium in this competition (Messrs. Pettingell & Thompson) had been granted the loan of the plans for a short time, and that in reply to a letter sent by the winner of the first premium (Mr. A. P. Bell) it had been stated that it did not follow that the approved plan would be carried out, or that the architect who had prepared it would be employed. We may here state that, as already announced in the *Builder* (p. 914), the first and second premiums are respectively 15*l.* and 10*l.*

The Royal Engineer Institute, Chatham. Parliament having granted 21,000*l.* for building this Institute, the foundation-stone was laid in May, 1872, by the Duke of Cambridge, and the building, of which we gave illustrations some time ago, is now nearly in full working order. Lieutenant Ommanney, R.E., was the author of the design, which is Italian in style. The building stands upon a foundation of concrete composed of blue lias lime and Thames ballast. The main front is decorated with details in terra-cotta, by Messrs. Doulton, of Lambeth, with the exception of the upper cornices and columns at the entrance.

New Lunatic Asylum near Lenzie, N.B. A new lunatic asylum at Woodilee, near Lenzie, was formally opened on the 22nd ult. The buildings, which are in the Elizabethan style, are about 700 ft. long, 450 ft. broad, and occupy an area of about six acres of ground. The principal front is towards the North British Railway. Two towers rise from either side of the recreation halls, their height being 150 ft. Above the main entrance a clock-tower rises to a height of 88 ft. The building, which is constructed from plans prepared by Messrs. Salmon & Son, architects, will accommodate 400 patients.

A New Paint-Solvent.—It is stated in a Suffolk paper that Mr. H. P. Hayhoe, painter, of Bury St. Edmunds, has invented a new paint-solvent. It is said that the solution is simply applied to the paint with a brush, and is then left for a short time, after which the paint may be scraped off with facility. The number of coats of solution depends upon the number of coats of paint; four, which may be applied within a quarter of an hour or so of each other, will probably be sufficient in the most hardened case. The solution, which it is alleged causes no injury whatever to the hands or to the brushes, is inexpensive, and produces no smell.

A Stockton Builder has been prosecuted at the police-court for having permitted houses to be occupied before they have been finished and certified. A writer in a local journal satirically observes that "it is too bad to make a single example in a district where houses are occupied before the floors are down, and sometimes before even the windows and doors are in. If builders are to be harassed in this way, we may some day expect to see mortar substituted for sea-sand, bricks for crumbling blocks of mud, woodwork a little more substantial than matchwood, and later on the extinction of 'jerry building.'"

Enormous Blast with Dynamite. — A few days ago (says the *Mining Journal*) a large blast with No. 1 Dynamite took place at Cauldon Lowe Limestone Quarry, near Frogall. To test the strength of the dynamite, it was decided to charge a chamber with 11 cwt. The fuse was then fired, and in the space of eleven minutes the charge exploded with immense effect, bringing down the face of the quarry 34 ft. back for a long distance, the quantity of stone dropped being roughly estimated at 30,000 tons. This shot illustrated the great saving of labour in using dynamite.

Glasgow Institute of Architects.—At the annual general meeting of the above, Mr. Robert Goodwin, architect, Glasgow, was admitted a member.

Studio for Ladies.—A lady-correspondent from the North of London inquires where her daughter can draw from the costumed living model in that neighbourhood. A week ago we should have been unable to answer the question, but it happens we can now say, and we are glad of the opportunity of doing so, that Mrs. Croudace, whose works both at the Royal Academy and in Suffolk-street may have been noticed, has made an arrangement for the meeting of ladies for the purpose in question at 34, High-street, Hampstead.

Discovery of another Deposit of Fire-Clay.—A deposit of what is said to be specially fine clay has recently been found at Draycot, in the neighbourhood of Wells. The clay is reported to be equal in quality to that obtained at Watcombe, near Torquay. Professor Etheridge, in his report, says of the bed at Draycott, that it is interstratified with or in the dolomitic conglomerate, in places of considerable thickness. It is a silicate of alumina of the richest quality, and contains about 10·50 per cent. peroxide of iron.

New Farm Buildings for the Duke of Roxburghe.—Extensive additions have recently been made at Floors Home Farm, Muserig, for the Duke of Roxburghe. The plans and working drawings were all furnished from his Grace's office at Broomlands, by Mr. W. C. Carnegie, the Duke's architect, and the following were the contractors:—Mason work, Mr. Bruce, Kelso; joiner work, Mr. Gray, Stitchel; plumber and slater work, Messrs. Common & Son, St. Boswells; plaster work, Mr. Johnston, Kelso; painter work, Mr. Hogarth, Kelso.

New Railway Offices at Inverness.—The Highland Railway Company has just completed a new wing of offices in Academy-street, Inverness, in close proximity to the railway-station. The total cost of the new structure, which is in the Italian style of architecture, from plans by Mr. Lawrie, will be about 12,000*l.* The new building forms one side of a square, the frontage to Academy-street presenting a recessed portion in the centre, with two slightly-projecting wings. On the ground-floor are three handsome shops.

A Colonial Surveyorship. — The appointment of colonial surveyor and foreman of works at St. Vincent, West Indies, at a salary of 500*l.* per annum, has been conferred on Sergeant-Major David Osment, Royal Engineers, who has been for some time past employed at Chatham as first-class military foreman of works in the corps. This is another of the numerous instances in which military foremen of works belonging to the Royal Engineers have had their abilities recognised by receiving valuable appointments.

Rome.—The *Voce della Verità* states that an archæological discovery has just been made at the Villa Barberini, near Castel Gandolfo, on the spot where stood the magnificent palace of the Emperor Domitian. Two fragments have been exposed of an entablature in white marble, having together a length of 16 ft., a width of 3 ft. 3 in., and a height of 1 ft. 8 in. They are in an excellent state of preservation; and the design and the sculpture are good.

Churwell Drainage.—At a recent meeting of the Churwell Local Board, plans, involving a considerable outlay for works of drainage and water supply, prepared by Mr. Filliter, C.E., Leeds, were sanctioned and approved, and an application was made to the Local Government Board for powers to borrow 7,000*l.* to complete the same. The Local Government Board have now directed that an inquiry into the subject-matter of such application shall be made.

Dinner of the Builders' Benevolent Institution.—Although we have already invited our readers' attention to this festival, we must be permitted to repeat that it is fixed to take place on Thursday next, the 11th. Mr. John Aird, jun., will preside, and there is a good list of stewards. The Institution has recently lost by death several of its early supporters, but new friends arise to take their place and maintain its efficiency.

Improvements in Kiln Firing.—Mr. C. Malpas, of Woore, has patented a system of firing pottery, bricks, lime, &c. There is claimed for the system that by an arrangement of the kilns or ovens having a continuous connexion with each other and with one chimney, and by an improved method of firing, the work can be done more efficiently, expeditiously, and economically than by the general system of firing now in use.

The Dundee Waterworks.—It is stated in a Dundee paper that Mr. Hawksley, C.E., has agreed, on the request of the Dundee Water Commissioners, to consider the present state of the new water-works, and to give his opinion in regard to them, and for this purpose he has ordered all the necessary plans to be forwarded to him. Mr. Harrison, C.E., whom the Commissioners also resolved to consult, has declined to act.

New Episcopal Residence for Brechin.—At a meeting held at Dundee on the 23rd ult., it was resolved to erect as a memorial of the late Bishop of Brechin, a new episcopal residence in connexion with the diocese, with a chapel attached, together with a monument over the grave of the deceased in St. Paul's Church, Dundee. The cost of the memorial is estimated at 10,000*l.*

Enlargement of Birmingham Gaol.—At the annual meeting of the Birmingham borough magistrates, on the 26th ult., it was resolved to make several alterations and additions at the borough gaol, so as to provide ninety-one additional cells. The work will be carried out from plans prepared by Messrs. Martin & Chamberlain, architects, at a cost of 5,500*l.*

Butler's Ball Valves and Cocks.—These ball-valves gave satisfaction to those who examined them in the Brighton Sanitary Exhibition. The valve being over the seating, instead of under, as in other ball-valves, the pressure aids the valve, and it is not likely to get out of order. The patentee claims, too, and we believe correctly, that it is cheaper than any other patent ball-valve or cock.

New Cathedral for Scotland.—Arrangements are in progress for converting the collegiate church of Cumbrae into a cathedral for the diocese of Argyll and the Isles, and it will be consecrated by the bishop early in the next summer. Attached to it will be the theological college which has been established by the Earl of Glasgow.

Removal of another of Wren's Churches. The Royal assent has been obtained, in spite of considerable local opposition, to the scheme proposed by the Ecclesiastical Commissioners for the demolition of the church of St. Michael, Queenhithe, and the affiliation of the parish to that of St. James, Garlickhithe.

Society of Engineers.—At a meeting of the Society of Engineers, held on Monday, 1st November, in the Society's Hall, Westminster-chambers, Victoria-street, Mr. J. H. Adams, president, in the chair, a paper on "Screw-propellers, their Shafts and Fittings," by Mr. W. Pendred, was read.

Royal Architectural Museum.—We would draw attention to the advertisement in our pages that on November 6th a Saturday afternoon Life Class will be opened at the Museum, at a fee of 3*s.* per month. Applications should be made by letter to the Instructor, at the Museum.

The Institution of Civil Engineers.—The weekly meetings here are to be resumed on Tuesday, the 9th instant, when a paper is to be read and a discussion invited on "The Manora Breakwater at Kurrachee," by Mr. W. H. Price.

Maidenhead. — The committee for the enlargement of St. Mary's Church have instructed Mr. A. W. Blomfield to prepare drawings and estimates, which will be before the public shortly.

Norfolk and Norwich Hospital.—Extensive additions, for laundry purposes, are about to be made to the Norfolk and Norwich Hospital. Mr. Boardman is the architect, and Mr. Lacy is the builder. The cost will be about 2,500*l.*

Institution of Surveyors.—The first ordinary general meeting of the session will be held on Monday, November 8, when the president, Mr. Thomas Huskinson, will open the session with an address.

Sir Gardner Wilkinson, F.R.S.—We hear with regret of the death of this distinguished archæologist and author. It took place at Llandovery, on the 29th ult. Sir Gardner was in the 79th year of his age.

Warrington District Highway Board.—At a meeting of the Warrington District Highway Board, on the 27th ult., the salary of the surveyor, Mr. John Thompson, was increased from 200*l.* to 250*l.* per annum.

The Worcester Music-hall has just been re-opened, after re-decoration by Messrs. Goodwin & Shakespeare, of Lowesmoor, under the direction of Mr. Henry Rowe, architect.

TENDERS

For the erection of the first portion of a fireproof Pantechnicon at Victoria Station, Pimlico, for Mr. William Hudson, of Brighton, London, and elsewhere. Messrs. Pain & Clark, surveyors:—

Chappell	£7,065	0	0
Adcock	6,976	0	0
Cooke & Green	6,596	0	0
Tarrant & Sons	6,492	0	0
Kirk & Randall	6,431	0	0
Mitchell	6,400	0	0
Howard	6,350	0	0
Peto, Brothers	6,088	0	0
Manley & Rogers	5,995	0	0
Deards	5,969	0	0
Trevena	5,834	0	0
Oliver (accepted)	5,761	0	0

For rebuilding warehouse and factory, Bunhill-row, Finsbury, for Mr. W. Walker:—

Allen & Son	£6,900	0	0
Ashby, Brothers	6,817	0	0
Killby	6,800	0	0
Ennor	6,720	0	0
Browne & Robinson	6,706	0	0
M'Lachlan & Co.	6,655	0	0
Pritchard	6,547	0	0
Scrivener & White	6,527	0	0
Cooke & Green	6,387	0	0
Perry & Co.	6,380	0	0

For house and school, at Junction-road, Romford, for Mr. J. P. Woodrow. Mr. E. C. Allam, architect. Quantities supplied:—

Black	£980	0	0
Potter	970	0	0
White	945	0	0
Barwell	890	0	0
Crisp (accepted)	868	0	0

For new billiard-room, &c., at Wey-gate, Guildown, Guildford. Messrs. E. W. Lower & Son, architects. Quantities by Mr. H. Moon, jun.:—

Mitchell	£650	0	0
Colls & Sons	620	0	0
Nye	596	0	0
Horn (accepted)	595	0	0

For the erection of a block of school buildings for 1,000 children, in the parish of Clee, Great Grimsby. Mr. Chas. Bell, architect:—

Jagger & Chapman	£9,118	0	0
S. & W. Pattinson	9,100	0	0
Smith	8,987	0	0
Haywood	8,977	0	0
Topham & Waddingham	8,875	0	0
Willows & Roebuck	8,800	0	0
Hobson & Taylor	8,692	0	0
Drew	8,300	0	0
Thompson (accepted)	8,080	0	0
Young	7,880	0	0

For the erection of thirty seven-roomed houses at Stratford, for Mr. H. O. Martin:—

Cocks	£10,890	0	0 !
Norris	10,727	0	0
Unwin	9,897	0	0
Dover, Son, & Co.	9,869	0	0
Rhodes & Co.	9,489	0	0
Gooding	8,430	0	0
Shaw	7,600	0	0
Johnson	6,450	0	0
King	6,150	0	0
Clements & Co.	5,900	0	0 !

For alterations to the White Horse, Hare-street, Bethnal-green, for Mr. John Elves. Mr. Edward Brown, architect:—

Stamp & Bowtle	£485	0	0
Loaring	472	0	0
Man (accepted)	437	0	0

For new keeper's lodge and outbuildings at Norbury Bootles, Knutsford, Cheshire. Mr. Arthur Vernon, architect:—

Messrs. Beswick (accepted)	£450	0	0

For new schools on the Glebe Estate, Chiswick. Mr. G. Saunders, architect:—

Bartlett	£1,968	0	0

For new schools, master's house, &c., at Tydee, Monmouthshire, for the Rogerstone and Henlliss School Board. Mr. F. A. Lansdowne, architect. Quantities supplied:—

Pearce	£3,104	0	0
Love	2,895	0	0
Stephens & Bastow	2,849	0	0
Linton	2,772	0	0
Jones & Co.	2,643	0	0
Williams & Sons	2,499	0	0
Miles	2,450	0	0
Jenkins	2,396	0	0
Jones & Son (accepted)	2,287	0	0
Davis	2,186	18	8

For alterations to shop-front, &c., and repairs, at No. 2, Crooms-hill, Greenwich, for Mr. W. Agate. Mr. Henry Roberts, architect:—

Heeps	£262	0	0
Hollis	195	0	0
Sanderson	178	0	0
Todd	157	10	0
Syer	150	0	0
Murrin	146	13	0
Williams (accepted)	115	0	0

For pair of villa residences at Orford-road, Walthamstow. Messrs. Eastman & Son, architects:—

Perry & Co.	£2,450	0	0
Marks	2,400	0	0
Crabb	2,310	0	0
Bayes & Ramage	2,300	0	0
Conder	2,295	0	0
Reed	2,212	0	0
Morter	1,987	0	0

TO CORRESPONDENTS.

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